

SUGAR INDUSTRY IN INDIA

My Recollections

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BOMBAY
POPULAR PRAKASHAN

PREFACE

Every person whom God has created is unique. There is nobody like you in the whole world, nor perhaps will ever be. The finger prints are different, the hair is different when seen under a high power electron microscope, the chromosome numbers are different, and the nature is different. Consequently, the life of every individual is also different, and if it can be written in a presentable way it can be full of interest and a sharing of experience which make for a richer life.

I have been associated with the Indian Sugar Industry almost since its inception in 1932 when Protective duty was imposed on all foreign sugar, and our sugar industry developed with phenomenal speed. Factories after factories were established in a planned or unplanned manner, because the profits were fascinating, and free enterprise came into full play.

I was intimately connected with the sugar industry, first as technologist, then as Technical Manager, and still later as General Manager. I had also the opportunity to go round the world for the study of the sugar industry in those countries in all its aspects—agriculture, technology and economics. As such, it struck me that my experiences of the sugar industry and also life's other experiences in general, may be of some interest to my colleagues, young technologists, and the public. It is in this hope that I have attempted to write my "Recollections".

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Calcutta

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I

OFF TO SUGAR

On 20 September 1933 I started from Mainpuri for Hari-nagar, Champaran, North Bihar by train, and after changing at Shikohabad, Banares, Muzaffarpur and Narkatiaganj, I reached Hari-nagar at mid-day on 22 September, this launching upon a career in Sugar from a lecturer of English literature at the Agra College.

My elder brother Chaturbhuj Narain was already at Hari-nagar since January 1933 as Assistant Manager at the Hari-nagar Sugar Mills Ltd., with Raja Narayanlal Bansilal Pittie as its Managing Director.

Hari-nagar is situated on the border of Nepal and was notorious for its malarial climate. A small river Ram Rekha flows by the side of the mill, and it was known to give cold and fever to anyone who took bath in it.

The Sugar Factory was under erection, the most interesting part of the whole thing to me was the steel chimney standing like a black giant high up in the air with scaffolding all around. Machine-rivetting of the mild plates went on night and day and the terrible rat-tat-tat sound in the night was a real nightmare. The site where the sugar factory was being erected used to be the burning ghat for the dead bodies, and of and on stories of ghosts and apparitions were circulated, which were readily believed by the simple people. Snakes were plentiful, and we had to be extremely careful in our movements particularly in the dark. Some people were bitten by snakes and died, some by shock and some by the poison.

Later I learnt that India has 216 species of snakes and only 42 out of them are poisonous. Many times, even a poisonous

snake is unable to impart the lethal dose to the victim; in which case the patient survives by charms etc.

There was no sugar industry worth the name in India before 1932, when with a heavy protective duty on imported sugar, there was a sudden spurt in the installation of sugar factories in India mainly in the United Provinces and Bihar, where sugarcane was already being cultivated on a commercial scale for the manufacture of jaggery or Gur.

India is in fact reputed to be the birth place of sugarcane, which used to grow in heaven for the privileged Gods to chew, and was known there as honeyreed. A small piece of sugarcane was stolen by a man from the heavens and propagated vegetatively by cutting the setts and planting here on earth, till it multiplied itself throughout India and later in the whole world.

The early thirties was the worst period of depression the world has ever seen. As such there was very great competition indeed for the supply of sugar machinery from foreign countries, particularly England and the European countries which were sugar machinery manufacturers. Complete machinery for a sugar factory ranging from a crushing of 500 to 800 tons of cane per day, could be purchased for a sum of Rs. 6·7 lacs. This included even steel tanks and pipe lines and taking all expenses into consideration, inclusive of building and land etc., a sugar factory could be erected for a paltry sum of Rs. 10 lacs or so. It will not be out of place to mention that such a sugar factory now in 1973 will cost near about Rs. 3 crores to build, a rise of 30 times in the cost.

The machinery for the Harinagar sugar factory was ordered from Czechoslovakia's Skoda plant, considered to be the finest on the continent. It was reputed to manufacture everything from a pin to an aeroplane, and it is said that Hitler attacked and annexed Czechoslovakia mainly for the acquisition of the Skoda plant.

The machinery supplied by Skodas was beyond reproach, and so the working of this sugar plant was rather smooth in comparison with many other factories which were supplied by machinery from England, Holland and Belgium. Skodas sent their erectors to supervise the erection, which was done

by Indian engineering firms, and also to run the plant initially and demonstrate the process for the manufacture of Plantation White Sugar as against the production of Raw Sugar and then refining it, as is done in almost all the white countries of the world.

We were all living in grass and bamboo huts. Brother Chaturbhuj Narain got a hut constructed for me also in his courtyard. C. N. was immediately elder to me and had always looked after me with great affection and interest. It was he who was instrumental in bringing me to the Sugar Industry from the teaching profession, visualising that this new line had a bright future, and his vision proved to be correct in the long run. After a disappointing B.Sc. I had changed over to the study of English literature, and passed my M.A. in the year 1933, but as luck would have it, it was B.Sc. and not M.A. which made my sugar career. I was well looked after by my brother and Bhavi (Sister-in-law) that I never felt that I was away from home, and after a few years this distant home became dearer than the original home.

Indian sugar industry has developed on the lines of sugar manufacture in Java, a Dutch colony then, where they manufactured plantation white sugar direct from cane juice, instead of refined sugar. There is no intermediate raw sugar and the sugarcane juice is subjected to intense clarification process, by which most of the impurities and colour of juice are eliminated and a brilliant shining golden juice is obtained from which sugar is crystallised. In the refining process, first of all, raw sugar is made by a partial clarification of sugarcane juice and then this raw brown sugar is completely remelted and again subjected to clarification, filtration and refining over activated bone char. The water-white liquor thus obtained is concentrated in vacuum pans and crystallised.

As the sugar industry was entirely new to India, we had to import Sugar Technologists and engineers from Java, after whose process the sugar factories were installed in India. India was mostly importing white sugar from Java before the imposition of the protective duty. After the spurt in the Indian sugar industry the Java sugar industry suffered a great set-back, and it was due to this that technical staff was rather easily available

from Java on easy terms due to widespread unemployment there.

One Altman, a Dutch Sugar Technologist was appointed from Java to work as Chief Technologist at the Harinagar sugar factory on a salary of Rs. 650/- per month, considered to be very high salary in those days of depression. He arrived by steamer at the Calcutta port. Our Assistant Manager Bansilal Chaudhary was deputed to receive him and bring him to Harinagar. Bansilalji did not find any bedding or hold-all in Altman's luggage and so asked him, "Where is your bedding". Altman did not understand and was looking blank. "What bedding" queried he. "I mean your bedding to spread on your bed to sleep" answered back Bansilalji. Altman was still at sea. Then he was explained that in India whenever we are travelling we are always carrying our own bedding to sleep.

It will be interesting to record why Narayanlalji, an industrialist from Bombay chose to establish a sugar factory so far remote from his place, and in a solitary corner of India on the borders of Nepal, where the climate was definitely bad.

It goes like this. Birlas had put up a sugar factory in the year 1932 at Narkatiaganj, a junction station on the B.N.W. Railway now N.E. Railway 10 miles east of Harinagar, and it had run satisfactorily for one season 1932-1933. The General Manager of the Narkatiaganj sugar factory was known to Narayanlalji, and when the latter expressed his desire to install a sugar factory, the former suggested Harinagar. Later, when Birlas came to know of the establishment of another factory so close to theirs, they tried to dissuade Narayanlalji from the project. But as it happens in such cases the latter became adamant and did manage to put up his sugar factory at Harinagar as planned in spite of Birla's efforts to the contrary. Narayanlalji was tempted to install his factory so close to Birlas as he thought that their foresight and business acumen was of the highest order. But later events and experience has shown that the sugarcane position in this part of the country was far from satisfactory and it is only now after nearly 40 years, that both the factories are getting cane according to their capacity.

With good planning and tireless work the factory was ready for crushing cane on the 21 November 1933 in the morning when Puja was performed elaborately and a dry coconut put into the moving cane carrier. As soon as this coconut reached the two roller crusher, the first unit of the milling train, and entered the crusher, there was a loud bang and the half ton cast iron coupling cracked into two pieces and came hurtling down the mill bed. Rupchand Mulji, a shift engineer who was moving around to supervise the mills was badly injured in his foot and was carried away to the nearby hospital for treatment. It was not a good omen and so the Pundits performed some additional Pujas to propitiate the Gods with greater vigour and enthusiasm, in order to ward off any evil effects of the unholy Spirits.

Skoda Works of Czechoslovakia had also sent one of their Sugar technologists Kuril, who had just returned from China after starting up a sugar factory in that country on a satisfactory run. We had already our technologist Altman from Java. Both these technologists were well experienced in sugar manufacture and after some initial troubles and difficulties, the sugar factory was running and producing comparatively good sugar. It was considered as the height of chemical wizardry to see crystal white sugar produced on the other end while sugarcane was fed in the cane carrier and carried to the mills for the extraction of juice. The formation of sugar crystals in the vacuum pans was particularly fascinating, and the technologist was regarded no less than a magician who produced solid shining sugar from the dirty blackish cane juice.

The General Manager Banarsi Prasad Jhunjhunwala was a well known congressman in Bihar and had influence with the highest echelons of society. Public contacts are always helpful in managing and running a big industry like sugar, which is agro-based and comes into intimate contact with thousands of cane-growers and public men. Banarsi Prasad was also clever and the first instance of his acumen came to light in dealing with the machinery suppliers. Machinery was all shipped from Czechoslovakia after packing it in wooden boxes as is the usual practice. On some point of dispute

Skodas started claiming that all the wood and the boxes belonged to them as we had paid only for the machinery and not the boxes. Banarsi Prasadji got a flash. He wrote to the Skodas to pay us the total freight that we had paid on the weight of the packing boxes from Czechoslovakia to India, and in fact to Harinagar and then remove all the wood and the packing boxes. This must have nonplussed them, because as far as I am aware, no reply was received from them and there was no further conversation in respect of the packing material.

Nepal being close by, there were several Nepalese watchmen at various points in the factory and its premises. It was found that they were, on the whole, more alert and obedient than others, but rather dull in the head. Once a new Nepali watchman was appointed while the General Manager was out of station. The General Manager came to Harinagar station without information and so no transport could be sent to him. As the railway station was near, he walked down by the short cut by which he had to cross the factory's railway siding where the new Nepali watchman was posted. The watchman had strict instructions not to allow anybody to enter the factory premises by crossing the line. The Nepali did not permit the General Manager to cross the railway line even when he insisted that he was the General Manager. While this was going on, accidentally another officer of the company reached that place and saved the situation. The Manager was however pleased and rewarded the Nepali watchman.

Weigert was the senior erector, and the company retained him practically as Chief Engineer to look after the machinery and its smooth running. We, in India, have a notion that the erector who erects the machinery is an expert engineer even to run the plant and the process. But this is a very mistaken idea which was brought home to me some years afterwards during my trip in 1938 to study sugar manufacture in other countries of the world. I was told by technical men there that India seems to have a very low standard of engineering when their erectors who were fitters could become our chief engineers.

There was a wrong and ill-informed notion in India that white sugar in Java was manufactured by the use of bone or bone char for clarification. The impression must have come to India from the process of refined sugar manufacture where the sugar liquor is clarified for its ash and colour removal, by filtering through long bone char columns 10'x30' in size, which I saw in American refineries. But no bone or any other undesirable or distasteful material is utilized in the manufacture of plantation white sugar as in India. Years after I took up sugar manufacture as my career, whenever I went home people came to enquire in confidence whether bone or any bone product was still used during the process of sugar manufacture, and on being convinced that the Indian sugar was pure, perhaps added to their sugar consumption.

Sugar cane varieties grown in North Bihar in those days had all Co. numbers, the main variety being Co. 213. It was a hardy purple variety, cultivated without irrigation. The cane planting time was from 15 February to 15 March. In the absence of any means of irrigation the moisture in the soil had to be preserved by mulching the soil from October to February. The principle behind this being to break the capillary action which causes the moisture of the lower soil layers to travel to the surface and thus evaporate. For nearly 20 years, as long as I was at Harinagar, rains arrived regularly by the 10th of May each year. Till then the cane plant sustained itself on the preserved soil moisture, held in the soil by the operation of a five-time cultivator to stir the top soil, and prevent the moisture from being lost in the atmosphere. Bullock power was the only power in use those days although tractors soon made their appearance on the Harinagar cane farms.

Co. means Coimbatore where the new cane varieties were bred. The question may reasonably be asked as to why canes to be grown in the north were bred at Coimbatore in the south, where the climatic conditions were different from the sub-tropics of the north. The reason is that canes do not flower or effloresce in the cold climate of the north. Coimbatore has a very favourable climate for cane efflorescence and most of the cane varieties which do not flower under

north Indian conditions flower profusely at Coimbatore. Efflorescence is essential for breeding and crossing of new varieties of sugar cane. I have had the opportunity of visiting the Coimbatore breeding station several times. I had also the rare privilege of meeting the wizard of sugar cane breeders Sir Venkataraman, who won universal renown as sugar-cane breeder using scant equipment mostly improvised by him. It goes to his credit that almost all successful cane varieties the world over have Co. parents.

The breeding process starts with the plucking of flowers early in the morning, and the pollen is dusted on other flowers which act as the female. The seeds contained in the flowers are thus fertilised, and these fertilised seeds are sown. It is very interesting to record that each seed gives a different variety of cane having its own individual characteristics, and each plant is closely observed and watched for its performance as regards its yield per acre, sugar recovery, resistance to disease etc. and then, if found satisfactory, multiplied and propagated by vegetative growth or planting of the cut setts which means that acres and acres of sugar cane of a certain variety have been multiplied only from one single stool of sugar cane of that variety.

Sir Venkataraman was absolutely unostentatious and simple. He used to put on a *lungi* only knee high, and a cotton shirt above. He put on suit only once when representing India at the International Sugar Conference in Australia in 1938, and again when he visited Louisiana. One day Sir Venkataraman was taking a field class in Coimbatore, when per chance the Commissioner of the Division, an Englishman, came to meet the famous sugar-cane breeder, and finding the talk interesting tarried to listen to it. Later when the lecture was finished, he enquired from the lecturer himself about the whereabouts of the Head of the breeding station. The Commissioner was taken aback to learn that he was the internationally famed Venkataraman. The Commissioner could not dream that the man could be dressed in a high up lungi and an ordinary shirt with missing buttons.

The crushing of cane went on and on, day in and day out, round the clock. Three shifts of eight hours each were wor-

king for 24 hours. The first shift worked from 8 a.m. to 4 p.m., the second shift from 4 p.m. to 12 midnight and the third up to 8 a.m. I was working as an apprentice manufacturing chemist. In order to give a good impression to the Dutch Chief Chemist, I used to put on my best clothes with a tie and all, working hard, sincerely and obediently. After a few days Altman told me, "I am pleased with your work, intelligence and grasp, but you dress too well for a sugar factory." That hint was sufficient for me, and I am extremely grateful to him for it. From that day till the year 1970, when I chose to retire from active service of the sugar industry, I always kept separate clothes for wearing in the factory which I had not to save from getting soiled and dirty, and this increased my working efficiency in the industry. When you put on expensive clothes in a factory you are bound to save them at cost of work. I have found during my long experience in India that the Indian educated young men, both engineers and technologists, care more for their clothes and hands than for their work. They seem to think that touching anything with their hands brings down their status and social standing. This is one of the big reasons why the young educated in India lack practical experience and the knowledge which gives results. It is like an educated modern bride who has seen how cooking is done, and seems to think that she could cook satisfactorily, but is a miserable failure when she attempts to do it. Knowing and doing are quite different things, and one can do nothing which one has not done oneself merely by theoretical knowledge. Particularly in industry, practical work with one's own hands is a 'must', if anything worthwhile is to be achieved. I always remember what I read long back in the introduction to an Engineering book: "A theoretical man knows 'Why', a practical man knows 'How', but a man who wants to succeed should know both the 'How' and the 'Why'."

I worked laboriously in the factory to gain practical experience, and studied the theory of sugar manufacture at home. I also learned early in life that there is no substitute for HARD WORK, and it paid me rich dividends advancing me in life from success to success till I attained a position of International repute as a Sugar Technologist. An example should

suffice. When I went to Australia in 1950 to attend the International Sugar Conference in that country, I took a letter of introduction for Dr. P. Honig, a Dutch sugar technologist, considered to be the topmost man in the sugar world, and who was incidentally the Chairman of the International Conference on Sugar. When I went to meet him and gave him the introduction letter, he looked at me, shook hands warmly and remarked, "Mr. Agarwal I know you, you do not need a letter of introduction". My joy knew no bounds that a man like Dr. Honig knew me through my research papers published in the international sugar journals.

"Nothing worthwhile can be achieved without hard work," is the emblem of the Roorkee University, and it is absolutely true. I saw this emblem written in Sanskrit on the pocket of a student of the University, while travelling near about Saharanpur, and as I do not understand Sanskrit asked him the meaning of it which he explained to me. I learned Sanskrit and ever since I am never tired to tell it to every young-man whom I have the privilege to meet intimately. Even to eat the food served before you, you have to stretch out your hand to eat it, masticate it well, and after you have swallowed the morsel, all the involuntary working of the digestive process starts, and continues even when you are fast sleep. I still remember the story when the hands and the feet and the other outer organs of the body conferred amongst themselves, and after serious discussion decided not to feed the stomach, who was only eating and doing nothing, while all the other organs were doing hard and conscientious work to keep the body going. And so the decision was put into effect. Eating was stopped quickly and expeditiously. One or two days passed without much difficulty, but on the third day there was all round feeling of lassitude and inactivity sweeping over the entire body. A day or two afterwards the striking organs found, much to their disappointment that they were feeling loss of strength, and were unable to function. They conferred again, realised their folly when the stomach explained to all of them how hard he was working even when they were all resting in snug beds and snoring, and thus providing them with blood, energy and life. This is also an example of not

only hard work, but the effectiveness of cooperative effort and efficiency.

With the passage of time the definition of 'Genius' has undergone modification. It was thought for a long time that genius was 90 per cent inspiration and 10 per cent perspiration but now it is realised more and more that genius is 90 per cent perspiration and only 10 per cent inspiration. Carlyle had a touchstone to evaluate genius. He said: "When somebody tells me that some young man is giving promise of a genius, the first question I ask him is 'does he work hard'?"

Earthquake

On 15 January 1934 we were all sitting in our hut and taking lunch just at noon time. We heard a loud gurgling sound, and felt that we were being tossed from side to side. Being unable to understand what it could be due to, in confusion we left eating and ran out of the hut. The earth was shaking so much that we could hardly stand and so sat down in fear. The mill chimney was moving from side to side which appeared to me about 2 ft. on either side. After a minute or so — it is difficult to tell the time — it was all over. We then realised that it was a terrible earthquake unprecedented in recent past and never experienced by us. Very fortunately there was no damage done to our sugar factory, nor was there any major or minor accident, which can only be explained by God's mercy. However strong the earthquake may have been in our parts, later I learnt that it was only mild in comparison to other parts of Bihar where the intensity was much more and the damage and the loss of life stupendous. By evening, news poured in of undescribable destruction, loss of life and property around Muzaffarpur, where buildings came crashing down and there were big fissures and cracks in the earth sending out gusts of sand and water. Monghyr city in Bihar was the worst affected. Thousands of people were killed. Piles of debris were to be seen everywhere. Removal of debris was mainly carried out by the relief workers under Rajendra Prasad, who was held in the greatest esteem in Bihar, and was popularly known as 'Babu' only. He was so simple and unassuming, that when I saw him for the first time, it was diffi-

cult for me to accept him as the renowned Rajendra Babu. His bearing was so unimpressive that I have hardly seen another man in my life so simple and unsophisticated in the exterior and so full of wit and wisdom in the interior.

When Rajendra Babu became the first President of India, I had the good fortune and privilege to pay a visit to see him at the Rashtrapati Bhavan in New Delhi. When I was ushered into his drawing room he was sitting on the sofa with his legs on it. He welcomed me with folded hands in his old style of humility, which I could hardly expect from the President of the largest Republic of the world. I had seen him after a lapse of some years, and I was glad to see him in improved health. He had been a chronic patient of asthma, and always looked rather weak and lustreless. Naturally, I enquired from him what medicine had done him good. He told me that he had stopped all the medicines and he was better for the following reasons: 1. Delhi has a dry climate; 2. I have a comfortable living; 3. I am saved from Sun, smoke and dust. As it was now dinner time I had a very simple meal with him which rather disappointed me as I had expected a big feast at the Rashtrapati Bhavan. I also learnt from Buaji (Rajendra Babu's elder sister) that while carrying on marriage negotiations for the daughters of the President, the parents of the prospective boys asked for dowry in cash. This surprised me beyond measure as I started reflecting that money had become more important than the status and the position of an individual.

Rajendra Babu had suffered some time back from a bad attack of jaundice. He continued to suffer in spite of the best treatment available to him inclusive of all the systems of medicine. There was an old driver named Ramraj working with the President. I knew this driver from Bihar. When he came to know of my visit he came to see me and narrated this incident. One day he quietly approached Rajendra Babu and respectfully requested him to try the incantation cure for jaundice as was the prevalent custom in Bihar villages. The President scolded the driver and admonished him for suggesting such things at the Rashtrapati Bhavan. But his jaundice refused to budge. After some time the faithful driver again suggested the same old village level treatment and this time

the President agreed, provided it was done secretly and quietly without any body else knowing it, and this was done, and it is said that Babuji improved. I have also seen this treatment in the villages and as a man of science I have not much faith in it, but as no medicine is administered internally, I do not object to it when it is practised on some of my close relatives who have more faith in it than myself.

Coming now to the sugar factory again, Altman, the Dutch Chief Chemist could not pull on well with Thakkar, who was factory superintendent, and so he resigned after the end of the first crushing season. The next appointment as Chief Technologist was of another Dutchman named Bosch. He started his career as an engineer on a steamer, but seeing no prospects, he studied sugar technology at a sugar school in Holland, and qualified as a sugar chemist. He was very hard working although not so experienced, and carried on for two seasons. Later we came to know that he was never a chief chemist in Java, but was considered clever according to Indian standard because we were absolutely raw as far as sugar manufacture was considered.

After Bosch left and joined the Hargaon factory of Birla Brothers, we had a very fine man Dr. Kampf who was an Austrian recommended to us by Skodas as Chief Technologist. He was very well educated being a Ph.D. in organic chemistry, well experienced and one of the most cultured and so spoken European gentlemen I had met till then. After I had five year's sugar experience it was decided by Narayanlalji that I should visit foreign countries manufacturing sugar from sugarcane to acquire greater knowledge and study the process of the manufacture of sugar so as to gain wider and more comprehensive experience than was available in India during those earlier days of the sugar industry in our country. It was extremely nice of Dr. Kampf to give me lessons in table manners and other related matters so as to make my foreign trip more comfortable and familiar, knowing full well that I was going to replace him as Chief Technologist of Harinagar Sugar after my return from the foreign trip. After leaving the Harinagar factory, Dr. Kampf joined Mandya sugar factory in Mysore as its Chief Chemist, till he was taken in a concentration camp

on the beginning of hostilities on the eve of the second world war. Later he was removed to the explosive factory of the Government of India to solve some crystallization problem in the manufacture of explosives which he solved and boosted up the production. After the end of the war he was released and went back to Europe and continued to work in the sugar industry there.

The climate of Harinagar was highly malarious, and malaria used to strike almost everybody once or twice a year. But to my astonishment I found that the Europeans were wholly free from this scourge. As such, I was very curious to know the reason and one of the things that I discovered was that they never drank any water as such. They used to obtain aerated soda water from Kellners who were railway caterers at Narkatiaganj station only ten miles from Harinagar, and took it in place of water. In fact climate consists of two things, air and water. Air cannot be changed so the sane thing is to avoid local water. We also found that malaria incidence decreased to a very great extent after tube wells were sunk inside the factory premises, and we started using the tube well water for drinking. It was the surface water, say 20-25 ft. deep which was highly infected. It was further confirmed by the facts that although the incidence of malaria was greatly reduced inside the factory compound, it continued to take its toll in the farms, where the staff still consumed hand pump water. One German tractor-engineer who had to live on the farms for long periods, avoided the ordinary water by boiling it with tea leaves, and taking it almost boiling after adding a few drops of lemon juice. The Europeans also were taking every week one tablet each of Atebrin and Plasmo-quinine, which were the recommended medicines prevalent in those days for the prevention of malaria. With these precautions and healthy food, they were able to keep healthy even in unhealthy climate, not only at Harinagar but elsewhere in the world where they had to go to erect and run their plants. All this indicated to me that it was more water than air which gave disease, and by avoiding this, one could remain comparatively free from disease.

Harinagar was situated in the district of Champaran in

north Bihar. The district town of Champaran is Motihari, and there is no town called Champaran. I had not known this type of nomenclature in the United Provinces, but later discovered that this system was quite popular in Bihar and also in Bengal and Assam. In the same way there is no place called Saran, but the district headquarters is Chhapra. The same is the case with Santhal Parganas with its district headquarters at Dumka.

Champaran flashed in the newspaper headlines when Mahatma Gandhi started his famous Satyagraha against the Indigo Planters there. This was in the year 1917 when Gandhiji had just returned from South Africa after his bold and historic stand against the oppression and segregation of Indians and Africans there. These planters were all Englishmen, who had come to India and found these pockets of profit and exploitation of the poor peasantry. They built prestigious bungalows for their residence in remote interior places, cultivated indigo, from which they manufactured the blue indigo, and exported it on very lucrative terms to foreign countries thus making tons of money. They used to be the monarchs of all they surveyed. There was nobody to limit their greed and wanton ways so much so that nobody, not even the police Daroga, was allowed to pass in front of their houses on horse back. He had to get down and lead the horse by the rein and ride back only when out of sight of the bungalow. The taxes imposed on the public in their *raj*, as it were, were many and multifarious. Whenever a horse was to be purchased by the Bara Saheb, there was a Horse-tax, a Sickness Tax whenever the Saheb or his Mem Saheb was taken ill and so on. The ways of the collection of the taxes were crude and inhuman. The villagers who could not pay were badly beaten up, their womenfolk raped and subjected to other indescribable indignities. I also heard that whenever a new bride came to any of the villages after marriage, she had to sleep with the Saheb on the first night. No wonder that Gandhiji was touched beyond measure by all these tales of repression, indignities and exploitation and so commenced his first Satyagraha in Champaran in India against these white Sahebs.

Champaran also means a garden of Champa, although I did

not find many Champa flowers growing there; it may be that it was called a garden due to its fertile soil and even land. I came to know that most of the well-to-do people of Chhupra owned land in Champaran, where crops grew with minimum of effort due to good soil and well distributed rain. The people were honest and most of the land of Chhupra gentry was given on share-cropping basis. They used to come at the time of harvest and collect their share without any difficulty.

Sugar Manufacture

A short description of the process of Sugar manufacture should not be amiss in the memoirs of a Sugar Technologist.

The process of sugar manufacture brings into play almost all the unit processes of Chemical Engineering, and I can safely say in view of my long experience that a sugar technologist becomes good enough to take up any branch of chemical engineering after having worked in a sugar factory. The actual process starts with the feeding of cane in an endless cane carrier. This is done manually in most of the factories still, although here and there some factories have installed mechanical unloaders to save labour costs and ensure a better and more regular feed of cane to the mill tandem for the extraction of juice for further processing. When manually done, approximately 50-60 workmen are required to feed the cane into the carrier per shift of eight hour's working. This cane passes under revolving knives, generally speaking two sets, and so gets reduced to finely cut pieces to enable better extraction of juice in the mills. The mills consist of three rollers, and the prepared cane is pressed twice while passing through each mill. The milling tandem consists of four to six mills of three rollers each thus having from 12 to 18 rollers. As much juice as is practicable and possible is extracted at the milling station, and the residual bagasse is carried to the boilers by conveyors to be fed to the furnaces, generally step grate type, for the generation of steam for power and process. If a factory is well managed and run, this bagasse should be sufficient for all the fuel requirements of the sugar factory, failing which extra fuel is burnt, which is very uneconomic.

The next step is the clarification of the dirty dark green or

sometimes blackish juice, depending upon the quality and colour of cane crushed. Of course, the raw juice as it is called, is first measured or weighed which forms the basis of all chemical control and accounting of sugar in a factory. The main clarificants used are lime and sulphur and no bone or bone product is used as is the common notion. Bone char is used during the manufacture of refined sugar and not plantation white sugar as was manufactured in Java and is now being manufactured in India. After the treatment with these chemicals the juice is brought to boiling temperature and sent to subsiders or settlers for the elimination of heavy impurities, and decantation of clear juice from the top surface. Previously this was being done in ordinary tanks, but now most of the factories have some kind of continuous setters called clarifiers. The most popular being the Dorr clarifier, an American invention and patent. In this clarifier, clear juice is continuously drawn and sent to the evaporating station for thickening, and the mud continuously sent to the filter presses or a vacuum filter. This continuous clarifier is an improvement on the old type of batch settling tanks now almost obsolete in the sugar industry in India.

The evaporator station, in the middle of the process, is the heart of the factory without which sugar manufacturing will become uneconomic as far as the consumption of fuel is concerned. In these multiple-effect evaporators, working under vacuum, increasing progressively from body to body, steam is applied only in the first body, but juice boils with the vapours of the succeeding bodies, thus one pound of steam applied is capable of evaporating 3-4-5 pounds of water from the juice. The concentrated juice as it comes out of the evaporators is called syrup.

Syrup is then sent to the vacuum pans for further concentration by evaporation till the stage is reached when sugar can no longer be held in solution and is thrown out in the form of extremely minute crystals, hardly visible to the naked eye. At this stage a microscope is helpful to determine the size and the number of crystals formed. The formation of crystals and their management is still considered an art — although in recent years it has been subjected to great scientific

control — and the panmen who work at this pan station are the highest paid workmen in a sugar factory.

The mixture of crystals and the sugar liquor is called massecuite from which the crystals are to be separated in the curing section where centrifugals are used for the purpose. The rest of the end process is simply washing, drying and separation or sifting of the sugar crystals in various sizes and bagged.

Sugar is hygroscopic i.e. it absorbs moisture from the atmosphere and becomes wet, and thus does not keep well for any long period of time. Suitable godowns are constructed to preserve the sugar well both from moisture and from sunlight, as sunlight spoils its colour and makes it yellowish.

The story of sugar manufacture looks rather simple to a layman, but in fact it involves very accurate working and control to deliver the goods by crushing the highest amount of cane per day, and producing good sugar with the highest recovery per cent cane, on which depends the profitability of the whole industry. The sugar technologist who can give the best results is highly esteemed and well paid.

After working for five years as Manufacturing Chemist at this factory I was sent round the world to study sugar and its manufacture in Australia, Fiji, Hawaii, Louisiana (U.S.A.), Cuba, England and on the Continent. Here I may mention that one should go to foreign countries for further studies only after one has acquired certain experience in that particular industry and knows the problems and the difficulties encountered, failing which one is unable to derive any tangible benefit because one does not know what to learn and study.

2

TRIP AROUND THE WORLD

At that time Hawaii was considered to be the most advanced country in the world for the study of sugar and sugar manufacture, both as regards agriculture and processing. It was therefore decided to devote the maximum time in the Hawaiian Islands, which also contained one of the best research stations run by the Hawaiian Sugar Planters' Association. After making all the preliminary arrangements regarding passport and visa I set sail on 5 May 1938 by *S. S. Comorin*, a P. & O. boat from Bombay.

Two hours after leaving Bombay I went to the dining hall for lunch. I saw the menu, but could not make head or tail but of it, as it was mostly written in French. The stewards were all Goans. When the table steward approached me to take the order, I told him that I was a vegetarian. "So you will not take meat, but only eggs and fish" was the prompt response. "No fish and no eggs either," was my hurried answer. "Then what will you eat?" was his astonished query. A chill went over my body. Just two hours after leaving the Indian shores, I was faced with the problem of eating. I began to wonder what will happen to my in-take of food during the rest of my voyage around the world which had hardly begun. I was face to face with the prospects of starvation. After some discussion and explanation the steward brought me some bread, butter, and boiled potatoes. Later I learnt that these potatoes were taken out from a meat preparation. After all the courses some fresh fruits were also served. A few other passengers got interested in my predicament and came to my rescue. In fact they strongly advised and forced me to take omlette, an egg

preparation which I could dare to take as the egg form was hardly visible.

The first port I touched was Colombo in Ceylon, now known as Sri Lanka. The huge neon light advertisements 'Ccylon for good Tea' were visible from a distance of several miles. Our boat did not berth at the pier, but stopped a little away from it. We had to go down the gangway on to small motor-driven boats. No sooner had the steamer halted than a number of tiny boats with oars made their appearance stocked with local wares, mainly toy elephants made of black and brown wood, and some local jewellery and trinkets. Bargaining was done by shouting and if some passenger wanted to buy something, the boatmen would throw a rope on to the deck with the particular toy in a small bag tied to the rope which had to be pulled up by the prospective customer. If the toy was liked by him, he would take out the toy and keep the price in the bag which would be pulled back to his boat by the seller. I also bought two black elephants and enjoyed the fun. I took some photographs as the whole thing was very interesting to me.

Colombo was very green and scenic and nearly all the passengers went round the city in taxies. I was reminded of the days of Ramayana when Ravana ruled in Lanka in the ages gone by and the big fight that waged there between the forces of good and evil as it were. It is said that when Sindbad the sailor reached Ceylon from Arabia in the middle ages, he found that the surface was covered with emery wherewith gems were cut and fashioned, diamonds in its rivers, and pearls in its valleys. Sapphires, rubies and emeralds were found in the shops of Kandy and Colombo, having been mined from the pits near Ratnapura, the city of gems.

Comorin was rather a small boat only 17,000 tons, and tossed badly on the high seas. Two days after sailing from Bombay I got sea-sick. Seasickness has been described by someone as a condition in which "every thing comes up and nothing goes down." There is a continuous feeling of nausea, which increases by standing. You are advised to eat and drink nothing. In fact drinking increases the feeling of nausea, and this seasickness takes all the pleasure out of an otherwise interesting

and educative voyage. My Goan cabin steward was very sympathetic and helpful. He advised me to lie in bed most of the time and eat only solid food and avoid liquids as far as possible. The steamer took 10 days and nights to touch Perth on the west coast of Australia after leaving Colombo, and this was my longest time on sea. I was completely fed up with water everywhere and when land was afterall visible I heaved a sigh of relief. It was past six in the evening when we touched Perth. As soon as the steamer stopped, I felt better. All the passengers were in a hurry to go down, go to the nearest post-office and post letters. I did the same. The market was all closed as according to the Shop and Establishment Act in Australia, no shop could remain open after 6 p.m. Only the shop windows were nicely decorated and lighted. After Perth I touched Fremantle, Adelaide and Sydney in Australia. Although when I started from Bombay in May it was full summer in India, when I reached Australia after about 15 days it was cold there as Australia is in the southern hemisphere and the seasons are opposite to those in the northern hemisphere.

It will be interesting to mention that time is advanced every day when travelling to the east. Every day there was a notice on the board notifying by how much time the watches were to be advanced. Everybody when going to bed at night would advance his watch by the time as notified. One day I forgot to do it, and when I reached the dining room for my breakfast I was surprised to find it all empty. On enquiry I was informed that the breakfast was over. After having made this mistake once, I did not make it again during the rest of my journey.

I had read in Geography that when you travel east and cross the International Date Line you gain a day, and when travelling west you lose a day, but there was no clear conception in my mind what all this meant in actual practice. A few days before reaching Hawaii we crossed the International Date Line. We were getting daily a nicely printed bulletin called *Polynesian*. Early in the morning, before we got up, it was slipped under the door, and was found lying in each cabin. It was a kind of newspaper, giving important international news and also the programme on board the ship including the various activities such as sports and other novel type of games and com-

petitions to keep the passengers entertained and busy. One day to my surprise I found that the *Polynesian* had the same day and date as the one I had read the day before. Naturally it occurred to me that there must have been a mistake in the date. So I looked for the previous day's bulletin, but found that the news was quite different which confirmed my suspicion of the wrong date. I went to the purser — an officer on the ship who keeps your cash and also gives sundry other small services — and told him about the mistake. He smiled back and remarked that there was no mistake and today was the same date and day as yesterday. This seemed to be a big joke which I could not comprehend. Later he explained that we had crossed the International Date Line the previous night, and so had gained a day. This did not end my confusion. I had sent a radiogram to Mr. Copp in Hawaii who was to come to receive me at Honolulu on a certain date. Now having gained a day I thought I would reach Honolulu a day later, and if Copp did not meet me I would be at sea in a distant land. I argued this point also with the benign purser who assured me that we would be reaching Honolulu on the same date and day as I had intimated to my friend by radiogram a few days ago. Still then I had a lurking apprehension lest Copp did not come.

After all this confusion the next day I received a cable from Copp reading as under:

R. N. Agarwal
care *Monterey*
ALOHA

—Copp

It is my habit that I always carry a pocket dictionary with me. As I did not know the word ALOHA I looked for it in the dictionary, but there was no such word. Now once again the helpful purser came to my rescue and explained to me that Aloha was a Hawaiian word meaning 'welcome', and your friend had used that word to give you a surprise.

At Sydney I had changed over to another steamer of the American Matson line named *Monterey*. This was a much bigger and more luxurious boat than the English *Comorin*.

There was a telephone in every cabin, and the bath rooms had hot and cold fresh water running. On the English boat we had to ask for hot water for bathing which was supplied in a small bucket. If you used soap with salty sea water, the hair would all stick together and form a big tangled bunch. I was now in a two berth cabin and my fellow passenger was a Scotsman named Stoddard. He was a wine merchant and did not relish the informal behaviour of the American stewards. I could also see the difference in their behaviour in comparison with the English boat. Here discipline was less rigid and the respect shown to the passengers scanty and informal. On the English ship the passengers were all "Sir", but on this American boat I became 'Young boy' and Stoddard 'Old boy' which naturally the Scot gentleman resented. On the English boats whenever we wanted our shoes to be polished, we kept them outside our cabin when retiring for the night, and on getting up in the morning when we opened the door, the shoes were there duly cleaned and polished. Myself and Stoddard did the same thing on *Monterey*. To our chargin our shoes were as they were, untouched. We conferred and decided to leave the shoes there till they were polished. So we took out another pair of shoes and left the other pair at the cabin door. We went to breakfast and came back but nothing happened. The shoes were left standing for one or two hours more, but as nothing happened we quietly pulled them in.

After leaving Australia, we touched Aukland, New Zealand, and had a round of the city with Stoddard. The original inhabitants of New Zealand were known as Maories. They are yellow in colour and quite intelligent. Taxi drivers and owners, fishing boat folks were all Maories. They are good artists and craftsmen, and we were delighted to see the museum which contained fine specimens of their art and craft similar in many respects to the Indian style.

The next port of call of the ship was Suva in Fiji islands. As usual, here also we went round the city for sight-seeing in a taxi. It was always a change and a pleasure to go down the boat for an outing on the shore, and to see new things which added to the general knowledge. Suva looked very much like an Indian city, and if we were blindfolded and

brought to Suva, we would hardly be able to tell that we were not in India. Fiji was a colony of the English people, and long back Indian labour was imported to develop it. Some of the descendants of these labourers had prospered, and taken to business such as running shops of consumer goods, taxies and the like. Some original inhabitants were also visible here and there, but they appeared undeveloped and uncared for. We also met two Indian leaders who were members of the Legislative Assembly, which was set up by the British to assuage the surge of patriotism, and the demand of participation in the Government. It was interesting to see coins worn round the neck in strings by the aborigines, which gave an inkling into the early coins having holes in the centre to facilitate this practice of wearing the coins on the body for safe custody.

After Fiji we touched the famous Samoan Islands about which I had read in R. L. Stevenson's *Treasure Island*. This island was lush green and shaded by coconut trees with copious fruits hanging down the tops. The local people held folk dances for the entertainment of the passengers. It was a great day for the island whenever a steamer arrived, because they did good business selling coconuts and receiving Bakshish for their dances. The scenic beauty was bewitching and no wonder Stevenson was charmed by these islands.

Our steamer was now heading for Hawaii. Two days before the due date at Honolulu, we were shown documentaries of the Hawaiian Islands, their beauty and the industries including Sugar and Pineapple.

Hawaii

On 12 June 1938, exactly five weeks after leaving Bombay our steamer steamed into the Honolulu harbour. From a distance we could see the Aloha Tower, standing ten stories high on the pier and welcoming all the people coming to Hawaii. Mr Copp of the Dorr Clarifier Co. came to receive me at the pier. I was extremely happy and relieved to find him there, failing which I would have felt stranded in an unknown country 12,000 miles away from home.

Copp took me to Young's Hotel where I was comfortably

accommodated in a single bedroom, on the first floor. It was a second class hotel by the American standards, but by Indian standards, it appeared to me a first class hotel, very clean and well-furnished with telephone and radio in every room. It was Copp who was to arrange my seeing the sugar factories, and the Research station etc. on these islands, and so asked me to be ready next morning at 9 a.m. after breakfast to go with him to one or two sugar factories. Naturally, I was ready, in my room a few minutes before 9 a.m. and expected Copp to show in at any moment, but the hands of my watch moved on and on till 9.25, but no trace of my friend. I was wondering all the time about the lack of punctuality of the Americans, when there was a knock at the door and there was Copp. I went down with him in the lift, but when we reached the porch of the hotel no car was visible. Copp went down the steps and started walking rather hurriedly out of the hotel on the road. I followed him quietly, but it was all puzzling to me. First, coming more than half an hour late, and then no car, no taxi, and walking down the road. After full 15 minute's walk Copp reached a car, opened the door and invited me to enter. He then made some payment to a boy and drove off. I then mustered courage and asked him what it was all about. He explained to me that there was extreme parking difficulty for cars as they were too many, and so the practice was to wait at the porch at the appointed time for the car. As soon as it pulls in to board it and off it goes. He stopped his car in the porch, waited for a minute or so, but not finding me, he had to drive back to find a parking place, the nearest of which was more than a mile away, where he parked his car, and walked to my hotel to pick me up. Naturally, I had to walk back with him to the car. I was very greatly embarrassed at all this, but I was helpless being quite new to this kind of experience. But to make amends for the first lapse I was very particular to be present a few minutes ahead of the appointed time.

A few days after my stay in Honolulu I was surprised to know that there was one more R. N. Agarwal there. He was a student and studying Sugar Technology in the University of Hawaii. On contacting him I discovered that his elder brother

was my class fellow at the Agra College in India. His name was Raj Narain Agarwal. Later to avoid misunderstanding on the telephone or otherwise, we distinguished ourselves as R. N. Agarwal, the student, or the tourist. It would be further of interest that Raj Narain was the third son of Prag Narain Vakil of Agra and a friend of my father, and so it was a great coincidence to find Raj Narain so far away from home.

Raj Narain had almost completed his two year's course of study of Sugar Technology at the Hawaiian University, and was due to return to India after some time. He was very helpful in guiding me in seeing the sugar factories and the sugar celebrities in Hawaii. As I found Young's hotel rather expensive for my purse, I shifted to Nuanu Y.M.C.A. on the advice of Raj Narain where I was equally comfortable at half the cost. After this experience, and also as suggested by Raj, I tried to stay at the Y.M.C.A.'s during the rest of my trip. They give preference to their members, but welcome others also whenever there was room. S. N. Lal, another Indian student, was also studying Sugar Technology in Honolulu, and now we were three Indians by chance in Hawaii, and so felt safe and familiar. Lal is at present a big boss with Parry & Co. in Madras. Raj Narain was sent to Hawaii to study sugar technology, so that he could look after his sugar factory in Kichha near Nainital, U.P. It was an old small plant purchased by Prag Narainji from the south, but gave endless trouble, and did not run well so much so that the well earned money in the ice business was almost lost in the sugar business. Unfortunately Prag Narainji fractured his legs during erection of the factory and in fact died before Raj Narain could come back to India after completing the sugar technology course. That Man proposes and God disposes is always true.

Hawaiian Islands consist of seven islands, big and small, the main four being Oahu, Hawaii, Kaui, and Maui on which the Hawaiian sugar industry is located. Hawaii is the biggest island and it is after this that the whole group takes its name. Honolulu is situated on the island of Oahu.

Amongst the sugar factories, Oahu Sugar Plantation Ltd. appeared to me to be the most interesting. Here one engineer Fleener had made nearly all the operations in the factory so

automatic that the labour strength was reduced to a very low level. When I entered the factory I thought that the factory was not running as I did not find any worker anywhere. Later I saw one fellow sitting on a stool by the side of the Oliver Filter, and unconcernedly smoking a cigarette. I was informed that this man was the only worker employed for the whole clarification section up to the evaporator station including all the pumps and other connected machinery, but the whole working was so mechanised and converted to automation that he had also nothing to do. The factory, as it were, ran itself. But our problem in India is quite different. If we adopt more and more automation here, more and more people will be thrown out of employment. At the same time rationalisation to a certain extent is surely called for and should be permitted in the cause of efficiency and export promotion. A happy mean has to be worked out in every industry in India so that employment and economic production can be balanced in a rational way.

The Research Station of the Honolulu Sugar Planters' Association was something to see. It is considered to be the richest sugar research station in the world as an unbelievable amount of money is spent upon experimentation and research. Research is the very life blood of any industry which is very much lacking in our country. My experience in India has been that organised big industries do not spend anything on research, but look upon the Government to set up such stations. The research station at Honolulu is being run by the Sugar Industry and not by the government. I made my own endeavours in India to persuade the sugar industry to set up its research station dealing with the problems facing the industry in the various branches of the industry including manufacturing, engineering, cane cultivation and marketing, but without any success. I also discovered that the spirit of co-operation for common good was lacking, and individual selfishness ruled the roost. The glaring example of this is the simple fact that the sugar factories of a certain region were unable to decide a common date for starting a particular crushing season, and even if it was decided, the factories concerned, did not adhere to the decision. Government institutions, on the other hand, are interested more in

fundamental research, not applicable to the practical aspects and problems in the industry. Recently this has been realised by the National Sugar Institute, Kanpur, and now good work is being done by the Institute in co-ordination and co-operation of the sugar factories.

When asked what were the main industries in Hawaii they would reply, "Our first industry is Sugar, second is Pineapple and the third Tourism." Till that time I had never heard that Tourism was an industry, but now I realise that Tourism is a very profitable industry for any country, because it is one-sided. Whoever comes to your country spends money and leaves it in your country, whether he eats, drinks, travels, goes sight-seeing, buys souvenirs, he is spending his money in your country, and your country is earning valuable foreign exchange.

Tourism in India can be developed into a very sizeable foreign exchange earning industry. With its vastness and historic monuments like the Taj Mahal, Ajanta and Ellora caves, the temples, shikar, hill stations and Kashmir, India is a land of unparalleled attraction to foreign tourists. There is no other country in the world where round the year, you can buy any climate you like. When it is winter in northern India you can enjoy sunshine in the south, and when there is scorching heat in the plains, you can have cool climate in the hills. People from the burning middle east can also come to spend the summer at the various hill stations in India. Only what is required is good accommodation at reasonable price, good food and transport, and a friendly atmosphere into the bargain. At the same time annoying touts, extracting porters and taxi-wallas, and above all the pestering beggars should be reasonably curbed.

A little digression on begging. The good impression of our country is washed away when dirty and maimed beggars and lepers pester the tourist at every step, at the railway stations, air ports, tourist spots, and in fact anywhere and everywhere. To a great extent the Indian public is also to blame. I agree with the Chief Minister of Tamilnadu when he says, "No givers, no beggars". By our misplaced sympathy and charity we are paying in India every day nearly Rs. 2 crores to the 50 lac beggars whose average income is Rs. 4/- per day. No wonder

95 per cent of the beggars replied that they were not interested to do any other work when asked to do so. Some years back the Madhya Pradesh government made begging illegal, arrested the beggars and put them in prison. Some were accommodated in Poor Houses, but they all ran away, and could not be rehabilitated. It appears therefore, that unless we curb our charity and divert it to other useful channels it will not be possible to banish beggary from our country.

Pick-pocketing is another great nuisance. A few years back while strolling on the pavement at the fashionable Chowringhee in Calcutta, my Parker pen was stolen so cleverly from my front pocket that I did not even feel the pull. I found out only after I reached the hotel. I was informed by the hotel staff, that here in Calcutta, anybody who was a little careful did not keep his pen anywhere to be seen and the foreign tourists losing their valuable pens at Chowringhee was a very common happening. It was really very depressing to reflect how India would be remembered by the tourist, who loses his pen or money here, and how on returning to his country, he would caution others not to visit a country of pick-pockets and thieves.

Tourism is the biggest business in the world today, and the fastest growing. It is already twice the size of the oil industry. It is a business from which everyone benefits. From the airline companies to the craftsmen in the far away villages, all share the profit. The number of tourists visiting India has greatly increased. From 1,50,000 in 1964 to almost 2,45,000 in 1969, and our earnings from tourism, have gone up to Rs. 33 crores in foreign exchange, but in terms of world tourism, only one out of every thousand of world travellers visited India last year. We have just everything in our country to make it the world's most attractive tourist destination. The city of Bangkok alone has more hotel beds, suitable for tourists, than we have in India as a whole. Jumbo jets will soon bring past India many thousand more people than have ever come this way, and we should be prepared to take good advantage of this feature and be prepared to face the challenge.

Hawaiian Islands are known as the "Paradise of the Pacific", flower filled where summer lasts all the year round, and the people are extremely hospitable. Discovered by Captain James

Cook in 1778 the Hawaiian islands are the most isolated inhabited area in the world. Yet Honolulu, capital of the islands and cross roads of the Pacific, is visited by some 1.5 million people annually by sea and air to enjoy the spectacular panorama of its beauty. Hawaiian spirit of "ALOHA" is something unique. It is an attitude of carefreeness and mutual help respecting the right of others.

Hawaii is perhaps the only place where "Greeting people" is an industry. If a friend is to visit the islands, you can arrange to have him met by a lovely brown skinned lass, who places a lei round his neck with a kiss, finds his luggage and arranges transport to the hotel. Americans, Chinese, Filipinos, and Hawaiians inhabit the islands, and there is such harmony that race riots have been unknown. They inter-marry freely and the present population is the product of mixed marriages. Honolulu enjoys one of the best climates on earth, airconditioned by nature having an average temperature of 24°C. It is also the earth's richest garden of exotic plants. Some 2,000 varieties of trees, ferns, flowers, mosses grow there and nowhere else. Thanks to jet transport Hawaii is perhaps the world's foremost Florist. Fragrant carnations, orchids, and flower leys or garlands woven by Hawaiian women are worn in all parts of the United States.

Today Hawaii supplies 40 per cent of the world's tinned pineapple, and 75 per cent of pineapple juice. There is a pineapple breeding station which produces nearly 100,000 new crosses each year in search of the perfect fruit. Some 20 per cent of the cultivated area is under sugarcane. The sugarcane planting lasts the whole year round, adjoining fields are harvested and planted the same day. Papaya is a regular fruit for breakfast which also grows the year round, and is served with a piece of lemon. The Waikiki beach which is 3 km long is a regular haunt for tourists where they can swim and surf ride.

One morning I went to see the prominent Aloha Tower which is visible from almost every place in Honolulu. As soon I arrived I saw an American coming down the lift, called an elevator in American parlance, and seeing no elevator boy enquired from him how to go to the top which was the 10th

floor. He explained to me that the elevator was automatic and I could operate it myself which I did. But the speed of the elevator was much more than I had seen in India, and even after crossing the 9th floor the speed seemed risky to me. Somehow I had an apprehension that it might over-shoot and land me in trouble; so I pressed the "stop" button, opened the door and looked around if I could get out. The elevator thus got stuck up between the 9th and the 10th floor. As time passed I got nervous. I pressed all the knobs, but the elevator did not move. It was quite warm inside and I started perspiring not knowing what to do. Being at wits' end I pressed the alarm signal at which somebody from the 10th floor shouted, "Who is there?" "A tourist from India", was my quick reply. Next he wanted to know as to what I was doing there. I told him that I was stuck up and the elevator refused to move. He shouted back, "Close the doors properly and press number 10," and low! the elevator immediately sprung back to life and carried me in a moment to the 10th floor. The trouble was so simple that I am ashamed to narrate now. Proper closing of the door is a safety device, which I did not know in 1938, and still wonder how many people in rural India know it. Lifts are only fixed in multistoried buildings in big cities, unapproachable to the common man in India, and therefore the common intricacies of these devices are not known.

I also went to see the Missionary monument on the outskirts of Honolulu. The history of this monument is very engrossing. One of the American missionaries, who came to Hawaii from the mainland, built a small hut just outside the town of Honolulu and started preaching and teaching the aborigines there. They were all very impressed with the missionary whom they started calling Father, and revered and respected him like a God, specially because he had white skin while they had brown or blackish. The white skin was attributed to Gods. The missionary as usual was very kindly and tended to the sick and needy. He was worshipped and regarded as a superman or an angel for some years. Unfortunately, one day he fell sick and had high fever. At this the local inhabitants held a kind of conference, sought advice and instructions from their leader. After prolonged deliberations they came to the conclusion that

because the Father got ill and was running temperature, he cannot be an angel, but must be a man only with the colour difference. Soon after they came with spears and arrows and murdered the missionary in his bed in cold blood. It was at this place that the Missionary monument was erected to perpetuate the memory of one of the earliest missionaries, who served the aborigines with love and devotion and was killed in this brutal manner by those whom he tended with affection and sincerity.

Hawaiian language is unique. It consists of five vowels and seven consonants only. The vowels A E I O U and the consonants are H K L M N P W. All the words in the Hawaiian language will contain only these 5 vowels and 7 consonants. As for example KAMEHMEA was the famous Hawaiian king whose annual day is still celebrated with a procession of beautiful decorated floats, and Hula Hula dance, peculiar to these islands, by the seductive Hawaiian girls. Hawaiians and Americans have crossed and the offsprings are the rage of the tourists. Waikiki is the renowned beach in Honolulu, and the longest word in the Hawaiian language that I came across was KAINAHANAHANAHOW consisting of 16 letters and which I still remember after a lapse of 35 years.

Sugarcane cultivation in Hawaii is of a very high order, based on extensive and laborious research carried out at the Experimental Research Station and also at the sugar factory farms, so that results of research in the laboratories is extended to the fields actually. Thus by this mutual coordination and co-operation maximum advantage of scientific experimentation is transmitted to the industry. It is highly mechanised due to shortage of labour, and apart from the mechanisation of field preparation operations, even harvesting of sugarcane was being done by means of several kinds of harvesters, most of which were in the prototype stage. The grab harvesting of cane that I witnessed was something terrible. Cane was grabbed by tines and pulled out of the ground, root and all, so much so that sand and stones were transported with the cane to the cane carrier. Sometimes the dirt was so much that the brix spindle would get stuck up in juice, when trying to determine its specific gravity. At one of the factories I saw

a cane laundry for washing and cleaning the grab harvested cane, costing Rs. 30 lacs in 1938. There was stripping of cane after harvesting to remove the leaves and roots, but the standard practice there was to burn the cane field before harvest and then to bring the cane to the factory without any more cleaning. In case of a bad burn the harvested and loaded cane in wagons appeared as if a small cane field was being transported to the factory.

There was no crop rotation in Hawaii and cane was being grown for years and years. Ratooning was also an important part of the economics of sugar cane cultivation as the non ratooning varieties were eliminated while selecting cane varieties for propagation. No organic manures were being used, and the theory or superstition that organic manures are essential to keep the soil in trim was also disproved. On my questioning I was informed that the soil analysis was so exhaustive as regards the main elements Nitrogen, Phosphorous, and Potassium, and also the trace elements like boron, silicon, etc. that any deficiencies were made up by the addition of the required chemicals in adequate quantities, that any question of the food starvation of the plants did not arise. In fact the ratoons, specially the second ratoon gave the highest yield of sugar cane per acre, due to the proliferation in the number of canes per stool.

Hawaii is also known for its high milling extraction. In fact to be more precise, it is the highest in the world. The term 'Milling Extraction' connotes the percentage of sugar extracted in the juice on 100 sugar in cane by the milling tandem. The Punene sugar factory on the island of Maui had the highest extraction in the world being 98.5 per cent as against Indian average of 91-92 per cent. To some extent it is explainable. Sugar cane is entirely grown by sugar factories themselves, and due to climatic factors the sugar factories run for 9 months in a year. They are, therefore, in no hurry to crush the cane as in India where the crushing season is limited on the cane available from the cultivators around the factory, and also from the reserved zones as fixed by the State Government; consequently the attempt in India is to crush the maximum amount of cane in the minimum time. In Hawaii,

therefore, cane is crushed slowly and surely with a view to recovering the maximum amount of sugar from the cane crushed. It is the individual economics which determines the method of working of a sugar factory in any country. In this connection I will ever remember what a celebrated Sugar Executive told me in Hawaii: "We were not interested in the sugar-making business, but in the money-making business, and if from tomorrow it will pay me more to manufacture 'muck' than sugar, I will start manufacturing 'muck' in my sugar factory".

It is always therefore, to be calculated what pays or what makes more money, whether crushing slow and obtaining more extraction and efficiency or crushing at a faster rate and at the expense of efficiency to make more sugar in a certain period of time, particularly when there is competition for cane.

Hawaii manufactures raw sugar by the process of defecation, that is by the use of milk of lime alone for the clarification of cane juice, which effects only partial elimination of impurities contained in the juice. The clear juice thus obtained is subjected to evaporation and concentration in multiple effect evaporators, working under progressive vacuum. The syrup obtained is crystallised in vacuum pans, and the resulting mass is cured in centrifugals to separate the crystals and the mother liquor. No washing or steaming is practised in the centrifugals. The raw sugar thus manufactured is brown in colour and the crystals are surrounded by a thin molasses film.

In order to manufacture refined sugar this raw brown sugar is the starting raw material. It is affined, melted, treated with lime and phosphate, and filtered. The filtered liquor is percolated over bone char filters for the final removal of ash and colour. The liquor coming out of the bone char filters is water white, and the first time when I saw it I could not understand how the sugar solution had been converted into water. This water-white liquor is sent to the pans for recrystallisation, to the centrifugals for the separation of crystals, where it is washed and steamed for drying. The fine crystals of this refined sugar are then bagged in 100 lb. cotton cloth bags and stored. The white countries consume this refined sugar, because to their taste the plantation white sugar as manufactured in India and

Java is not good enough to eat. In fact the white sugar which is exported from India to America is remelted and refined before it is fit for consumption in the United States.

When going round the world one comes across varying climates including hot, cold and rainy. I was therefore, carrying with me two suitcases, one containing woollen clothes and the other summer clothing. I was informed in Hawaii that I would not need any winter clothing till I reached New York in the month of September. I was, under the circumstances, advised not to carry with me both the suitcases, while visiting the southern States, and Cuba, but book the suitcase having winter clothes direct to New York, and collect it there when I arrived. This advice was very sound and I decided to put it into execution. I therefore, went to the Honolulu pier to check it to New York. The sailor clerk in charge enquired from me to which country I belonged? I told him India. At this he smiled and remarked, "India is a very nice country". Naturally I felt flattered, but his laugh was a little mischievous, and somewhat sarcastic. So I asked him, "What is the nice thing you like in India?" This time he laughed louder and spoke derisively, "One man many wives". I started reflecting on the efficacy of the British propaganda around the world about the adverse side of our country, so much so that a sailor in Honolulu was influenced by it. He perhaps did not know anything else about India. I was faced with such instances several times during my trip.

Nobody had seen a Sola Hat in Hawaii. I had carried one with me from India, costing, if I remember correctly, only Rs. 3/-, but it had taken the fancy of one of the American boys who was staying close to me at the Nuanu Y.M.C.A. A day before I was due to leave the charming Hawaiian islands, he came to me and requested me to give the hat to him. Immediately I presented it to him, but he would not agree to take it free and insisted that I should buy something in exchange. As I found that he was adamant, I had to agree, and I purchased silken Chinese bed-room slippers, as a kind of barter. He then accepted the old sola hat, donned it with pride and ran to show it to his other friends.

The United States of America

After staying in Hawaii for six weeks, I left for San Francisco by another steamer of the Matson line *S. S. Mariposa*. Raj Narain who had finished his studies at the university of Hawaii decided to travel with me through the sugar countries of my itinerary on way back to India. I was also very pleased to have a friend with me instead of travelling all alone with all the risks of unknown lands. On an average the steamer travelled nearly 400 miles per day. It was five day's journey to San Fransisco from Honolulu, which meant a distance of approximately 2,000 miles. Kaar, vice-president of the Dorr Clarifier Co. of America, who had arranged introductory letters for me in Hawaii and the United States, had recommended to me to carry with me a turban, as is used by the Princes in India, to be worn as a head dress, particularly in America where it was respected. I had a nice silk pink turban with golden laces worn by me during my marriage in 1935. So I decided to take it with me. When our steamer was to reach Frisco after a day or so, I put on the turban and started walking on the deck in the evening. After some time I noticed that many eyes were turned towards me, particularly of young girls. I reflected for a few minutes and came to the conclusion that it must be the turban. I went down to my cabin, took off the turban, and never used it again anywhere. Turban in America represented a Prince from India, fabulously rich and fond of good life, and as such was a source of potent danger to me, in as much as I would have been followed, blackmailed or robbed. So the friendly advice of Kaar, given in good faith, might have proved expensive or unsafe to me if I had failed to notice the attentive and staring eyes fixed on me during my short stroll on the *Mariposa* deck.

Another incident on board the *Mariposa* is interesting. I was told, while approaching the mainland — America was called the mainland in Hawaii — that Frisco, short name of San Fransisco, had many Chinese. While casually talking to an American on the ship I asked him how he liked the Chinese. He at once retorted back, "I hate them". "Why" was my next query. "Because they work too hard", was his quick

answer, but looked very unconvincing to me. So I told him that hating the Chinese because they worked too hard was not carrying any water. "Why not? They will work, their women will work, their children will work, and so now the apple gardens that used to belong to the Americans, now belong to the damn Chinese", he said in one breath.

A few hours before reaching the Frisco harbour, a plant quarantine officer came on board, examined all our luggage minutely for any flowers and fruits and sealed all the suitcases of all the passengers. This was done as a protection against the import of any fruit or flower disease in the form of fungus, insect or parasite which may infect or damage the fruit gardens on the mainland. This plant quarantine was even more strict than customs, because some years back some insect pest came along unnoticed, when the precautions taken were not so strict, and destroyed pear and apple gardens in California.

As we approached the harbour we were shown from a distance the two huge big bridges which hold world record, one for its length and the other for its single span. The Oakland Bay bridge is eight miles long, and the other known as the Golden Gate Bridge has a single span one mile long, the longest in the world. I went to see both of these bridges and was surprised to know that the cement used in the construction of the Oakland Bay bridge was sufficient to construct a cement road 18 ft. wide from San Fransisco to New York across the U.S.A.

I noticed nice big tomatoes growing in water, and was naturally interested to know more about it. This science is called Hydroponics which means "Water Culture". In this method no soil is required. The roots just hang in water and are visible. The requisite nutrients are dissolved in water and fed to the plants. Dr. Sampurnanand, who was once the Chief Minister of Uttar Pradesh, was also interested in water culture of plants, and I cursorily glanced through his book on hydroponics, although I did not make any practical use of the same. Planting of gardens in the compounds of the new houses being built, was another practice which drew my attention. During my tour of Frisco I noticed that houses were still under

construction, but the garden was ready. I was told that there were regular companies which undertook to plant the gardens around the new houses under construction. Full grown trees were uprooted with superficial roots, planted in the new soil and fed with nutrients dissolved in water. The holding function of the roots was taken over by suitable guys which held the trees firmly. Trees which would take twenty years to grow were planted in a matter of days. Nutrient requirements of many kinds of decorative trees have been studied in detail, and thus by taking over the natural function of the roots which draw nourishment from the soil and provide anchorage, by artificial means, the trees live and grow, and in no time develop natural roots to take over.

I was one day sitting in one of the coffee houses in the city of Frisco, when an American came and sat by my side. He also ordered coffee for himself. When he came to know that I was from India he asked me a very simple question, "Is it a fact that cows are walking on the streets of Calcutta?" I replied in the affirmative. He thought that I had not understood his question, so he repeated "I mean cows, animals that give milk". I again said, "Yes". Then he blurted out, "What cows are walking on the roads in Calcutta, here in America even men do not walk on the roads, they walk on the foot paths." Being somewhat embarrassed I asked him, "who has told you all this?" "I have read it in Rudyard Kipling's book", was his prompt answer. Later I came to know that Rudyard Kipling, who had long association with India, had written a very damaging book about India which was read extensively in the United States. This is another example how the English people were successful in tarnishing the image of India around the world to justify their benign rule of India for the benefit of Indians.

Another instance of this vicious propaganda was the remark made by quite a few fellow passengers on board the steamers by which I travelled. Several people told me, "You speak splendid English". I started wondering what it meant when it was repeated to me by a number of passengers. On being questioned, one of them told me that he had read one or two books on India which said that India was a big wild country, and the Indians were all uneducated and uncultured. So when

they see an Indian well-cultured and speaking English even better than them they are astonished.

Before I landed at San Fransisco, I met an American lady on the deck of the steamer. She was a resident of Washington, and when she learnt from me that I was going round the world to study sugar industry, she got interested in me and made searching enquiries about India and its leaders, particularly Gandhi, Nehru and Tagore. She was good enough to give me two advices, which I meticulously followed and profited from. The first one was "to be beware of strangers" and the second was "beware of girls". Later I came to know that many Indians who did not take care about these two matters came to serious grief in the United States and elsewhere.

In San Fransisco I had the opportunity to see the largest Sugar Refinery in the world. This refinery was importing raw sugar from Hawaii and Cuba, and was refining 2,000 tons or twenty thousand bags of sugar per day. The factory consisted of ten floors served by elevators, and took me five hours to pass through. The process of refining was the standard process i. e. affining, melting, clarification, filtration, and finally percolation over activated bone char to yield the water white liquor as described earlier. The end process was crystallization, separation of crystals, washing, drying, and bagging.

It was here that I learnt that India was exporting jute bags the world over including Hawaii, Cuba and the United States, and thus earning valuable foreign exchange. Till then there was no substitute fibre or synthetic material as today, and India had the world monopoly for jute bags and jute materials including jute backing for the manufacture of carpets.

When I reached the end of the refining process, all of a sudden I heard sweet and loud music, and was wondering what it was all about in a refining factory. This was the packing department where mainly young girls were packing refined sugar in different sized cotton bags ranging from 1 lb. to 5 lbs. The explanation regarding the playing of music was that packing was rather dull work, and the girls required music to keep up the pep. Later on, the pronounced influence of music has been further developed and realised so much so, that it has been experimented that cows yield more milk under the influence

of music, and the flower plants bear better and bigger flowers, if music is played to them regularly during the period of their growth. Sir Jagdish Chandra Bose, the internationally reputed botanist from Bengal, did commendable work on the response of plants to sentiments and emotions like human beings. I had the privilege of hearing him at the Banares Hindu University in the year 1929, when he was invited to deliver some lectures on his research work at the time of the annual convocation. I still remember his having said that he did not bring a certain plant for demonstration, as it was too tired after the travel from Calcutta to Banares. Such was his feeling towards the living plants. To him the only difference between human beings, animals, and plants was in the degree of life, but the Life is the same in all the stages of evolution of life and form.

I found that the warehousing of sugar was highly developed. Sugar is extremely hygroscopic i.e. it absorbs moisture from the atmosphere and gets wet in storage, and also loses its colour by exposure to sun's rays. As such sugar bags were stored in conditioned godowns where humidity and temperature were under absolute control, and no sunlight was allowed to enter. The godowns were all fitted with artificial electric light. Under these conditions sugar stored well for a long period of time without showing any ill effects of deterioration in any manner.

From Frisco I took the train for Los Angeles in Southern California. A few miles from Los Angeles is situated the world-famous Hollywood, the centre of the American Film Industry. I hired a cab for the trip to Hollywood. On reaching there I found that there were no skyscrapers, as in the rest of the United States, but the buildings were all two or three storeys high, but magnificently built with extensive velvety lawns in front. Most of these prestigious houses belonged to the film actors and actresses, and were said to be constructed at a cost of a million dollars each, which to me was an inconceivable amount of money. The city was well planned and very clean. The multi-coloured beams of light sent forth from flood lights were particularly attractive to me as it was something novel, the like of which I had not seen before.

I learnt that there was a Beet sugar factory near by, and I went to have a look at the factory and the process of sugar

manufacture from beet instead of cane. Beet grows in cold climate, and the colder areas of the world, including the European continent, are all manufacturing sugar from beet. The beets were white big radishes like the ones growing in Jaunpur and contained more sugar than sugarcane. Some of the beets weighed upto two kilograms. The process of extraction of juice from the beets is quite different from sugar cane. Beets are washed and then sliced in a shredder to form fine shreds. These shreds are boiled with water for the extraction of juice a number of times till most of the juice is boiled out. The refuse, after juice extraction, is fed to cattle and is good for fattening and milk yields. A ranching farm is attached to each beet factory for the utilisation of the beet refuse. As there is no fuel like bagasse in a sugar factory, extra fuel is required in each beet factory. In this woodland factory natural gas was being used as fuel for the generation of steam for power and process. The clarification process for juice is the standard carbonatation system as practised in the carbonatation factories in India, and the resultant clear juice is sent for further treatment. The main difference between the cane juice and the beet juice is that the latter contains no invert sugar or glucose, as such the final molasses purity is very high being of the order of 55° as against $32-33^{\circ}$ obtained in a sugar factory handling cane juices. Sugar must be further extracted from this so called exhausted molasses in order to make the manufacture of sugar from beet economic. Therefore, every beet sugar factory has what is known as the Steffen house for the further recovery of sugar from the beet molasses. The process consists in binding the sugar present in the molasses by means of lime into sucrate of lime. This solution of lime sucrate is utilised for making milk of lime which is used for clarification. When this sucrate comes into close contact with juice during the process of clarification, it breaks up in sugar and lime, sending sugar in solution which is crystallised in the usual process of sugar manufacture.

Chemically, cane sugar which is Sucrose is the same whatever the source may be, whether cane, beet or any other fruit, but even in a country like the United States there is a bias in favour of cane sugar in comparison with beet sugar. This was revealed

to me when I noticed on sugar cartons, 'Refined from pure Cane Sugar', and on enquiry I came to know of the prejudice against beet sugar, although there is absolutely no basis for the same.

I had planned my whole journey by train in the United States at San Fransisco, and the railway issued me one single ticket like a horoscope, by pasting one ticket to another. These pieces, as they may be called, were detached by the railway staff when that part of the journey was completed. This was a very convenient system as no tickets were to be purchased again and again. The Railways in America are owned by private companies and not by the Government as in India, and as a result of competition, are very efficient. Any industry when it becomes a monopoly, whether in the public or private sector, tends to become inefficient. There were three classes, Pullman, Tourist and Coach. Pullman and Tourist classes had sleeping arrangement for the night, while the Coach class had only sitting accommodation, something like the Rajdhani Express which runs between Howrah and New Delhi. All the trains were of vestibule type, i.e. all the compartments were interconnected by means of a corridor. All the trains and all classes were air-conditioned. There was no crowding anywhere, and the travel was comfortable and easy to arrange. Travelling in India is always a trial as we all know it, from the availability of the ticket to the reaching of the destination. This must have given rise to the practice of sending a telegram on arrival at the destination: "Reached safely and comfortably". There are hardly any porters anywhere on the railway stations to carry your luggage. Americans travel light, and everybody, including the ladies, lift and carry their own luggage, which is only a 24-26" suitcase. The system of carrying one's own bedding is non-existent anywhere except in India. I did not find any white American porters anywhere. There were, here and there, some Negro porters to carry heavy luggage consigned by the railways.

From Los Angeles my destination was Louisiana where the American Cane Sugar Industry was situated. But I was advised not to miss the Grand Canyon, where I could see the master work of Nature's Erosion. Here the Colorado river has been

eroding the soil for hundreds of years, and made a deep gorge one mile deep with steep sloping sides, in the Rocky mountains in the state of Colorado. The soil around and in the plateau is of different hues. Small glass tubes containing these coloured soils, arranged in beautiful scenes were on sale as souvenirs, and I also purchased one which is still with me.

From Grand Canyon I headed for Louisiana. It was rather warm in these parts, and a few stations before reaching New Orleans, when I looked out of the train, I was almost scorched by the hot wind, which appeared hotter due to the temperature difference inside the train which was maintaining at a temperature of 68°F.

I hardly realised that I was in the Southern portion of United States, where the Negro problem had been extremely grave, and Abraham Lincoln was assassinated in a cinema house by Booth less than a century back. I went round several hotels in New Orleans, but everywhere got the same reply, "Sorry, we have no accommodation." Raj Narain was with me and we both were wondering what could be the reason of so much rush in the hotels at that time of the year. It occurred to us that the difficulty may be racial or colour, so as soon as we approached the reception of another hotel, we at once revealed our identity telling them that we were tourists from India. We got a room easily, and afterwards we adopted the same procedure during the rest of the journey in the States. Later we came to know, that although we did not look like Negroes, but the children of the white Americans and the Negroes looked very much like most of the Indians. We were rather astonished to find that even railway compartments were marked White and Coloured, and so was the case with waiting rooms at the railway stations.

I was surprised to find a Napolean house in New Orleans. The city had many Americans of French descent. I was told that after conquering the whole of Europe, Napoleon wanted to invade and win America also, and as such had sent French people to settle down in Louisiana adjacent to the gulf of Mexico, where New Orleans is situated. A house was built for him in advance, but he never could come to live in it.

It was very pleasing and satisfying to know that the main variety of sugarcane under cultivation in Louisiana was Co. 290

which meant that it was an Indian variety bred at Coimbatore in South India. All the Americans connected with the sugar industry knew the name of Sir Venkataraman, the wizard of sugarcane breeders. Co. 290 was popular in these parts particularly because it was a windrowing variety, and so immensely suited for Louisiana, where there was usually a severe cold frost in December, which nearly killed the standing cane in the fields. After the blighting frost, sugarcane was all harvested at the earliest and buried under earth in between the cane lines 5 ft. apart. This buried cane withstood the deterioration process considerably, and remained fit for crushing for a fortnight or so. It was taken out of the ground every day to feed the sugar factory, and thus the cane crushing season could be advanced by 15 days in spite of the terrific frost. The process of harvesting, burying and digging back to supply to the factory was called windrowing, for which purpose the most suitable variety was found to be the sturdy and resistant Co. 290, an Indian product. Windrowing is peculiar only to Louisiana, because I did not hear of this practice anywhere else in the sugar world.

Other cane varieties being grown in Louisiana were all bred at Canal Point, and as such these varieties had CP numbers to indicate the place of their breeding. But without exception, one of the parent of the successful CP varieties was an Indian cane. Indian canes have been bred by crossing with Saccharum Spontanum, which is a very hardy reed, and thus the robust and hardy characteristics of the reed have been incorporated in Indian canes, which are capable of growing successfully under very severe conditions of climate and rainfall. Sir Venkataraman was successful even in crossing sugarcane with bamboo — bamboo flowers once in 30 years — but the resultant varieties had very low sugar content, and so were not propagated.

I went to see a sugar factory at Houma about 30 miles from New Orleans. An aged engineer was showing me around. It was Saturday evening. At 5 p.m. he apologised to me and put me in charge of another engineer to show me the rest of the factory. While taking leave of me he informed me that he was driving to New Orleans with one of his friends to see a picture first and later to dance. Picture was alright but when he talked

of dancing, I was a little surprised as he looked so old and haggard that I wondered whether any girl would like to dance with him. It might have been impolite on my part but I could not restrain myself and asked him whether girls still would dance with him. At this he grew somewhat downcast and answered in a low and weak tone, "It is true that girls no longer look at me, but I have the satisfaction of looking at them." Anyway I was pleased with the way the Americans took life even in old age. I was reminded of the Indian poet Keshav, who bemoaned his old age by singing that his hair had done him that which even enemies do not do. The young girls having moon-like faces and eyes of a deer, do not look at him any more with loving eyes, but call him grandfather and walk away.

One senior sugar technologist was showing me round another sugar factory, and during the conversation I remarked that in order to succeed, one must be up-to-date in any industry. He retorted back, "Up-to-date is out date". I did not understand a bit what he meant, and so looked at him with a rather blank face. He continued, "Up-to-date was out of date because it was one day old, you should be up-to-the-minute". Ever since I have remembered it and tried to be up-to-the-minute so far the sugar industry is concerned, and it has paid me rich dividends.

I found that the conditions in Louisiana, for the commercial success of the sugar industry, were very severe and unfavourable, and it occurred to me that if sugar manufacture could pay in Louisiana, under such adverse circumstances, why it should not pay anywhere else in the world. The yield of sugarcane per acre was low, the recovery was low, and added to this, the length of the season was 3-4 months only in rather a long season. In India the Central Government fixes the price of sugar after taking into consideration the length of the season and the recovery of sugar which is a clear indication that the profitability of the sugar industry is based upon these two important factors. In Louisiana both these factors militate against the sugar industry in boosting up the manufacturing cost, and hence the profitability must be low in that country.

From Louisiana I went to Florida where cane was being

cultivated in the Everglades, and the largest factory outside Cuba was located there. Everglades in America meant marshy land, which is soaked with water, and nothing grows there. It was a marvel of drainage and scientific research, that thousands and thousands of acres of beautiful sugarcane was growing, where not even a blade of grass grew before. When I saw channels of water flowing in between the green cane fields, I thought that they were all water channels for the irrigation of cane, but when I was told that they were drainage channels, it took me some time to understand it. To start with, drainage channels were dug through the vast everglades to drain off the water, and dry the land. As this land was below the sea level, powerful and high capacity pumps were installed to pump this drainage water into the sea. The land thus reclaimed was planted with sugarcane setts. The setts spouted a little and then withered. All combination of manure doses were tried, but without any success. Samples of the soil were taken to the laboratory and experiments after experiments were continuously carried out to grow sugarcane in pots. One of the clever agronomist gave his attention now to the trace elements and discovered, to his surprise, and satisfaction, that the soil was poor in copper and zinc. Trial doses of copper sulphate and zinc chloride were then added, and behold, the cane plants shot forth. The shock, which was felt by scientists when nothing grew in the dry land after expensive drainage channels and pumping this drainage water into the sea, was thus washed away. This tremendous success was behind the establishment of the biggest sugar factory in the United States at Clewiston in Florida, and that also on a co-operative basis. In order to cut down the transport cost of sugarcane the factory was located in the centre of the cane fields. This co-operative factory crushed 6,000 tons of cane per day and made raw sugar after the prevalent American practice. Now I understand that more area of the everglades has been reclaimed, and at present about half a dozen prosperous sugar factories are operating there which was once pure marshy land.

Cuba

From Clewiston I travelled to the famous Miami beach for

which the Americans are crazy. After staying there for a day to enjoy the beach and the surroundings I set sail for Cuba, and reached Havana in the morning after a voyage of approximately 12 hours. In Havana also I had some difficulty to find accommodation like in New Orleans, but on telling them that I was a tourist from India, the difficulty was overcome, and I got a nice room at the Laffeate hotel.

One Migual Arango, a Spanish engineer, was to show me around the Cuban sugar factories. This was arranged through the courtesy of Kaar of the Dorr Clarifier Co., and although he is no more now, I am still grateful to him for all his assistance, without which I could not dare to leave the shores of India, and get lost in the wide world. When I went to see him in his office I found him a strong well-built man sitting erect in his office chair, and looking around 50 years of age. He spoke English haltingly, with a peculiar accent, but quite understandable. After a few minutes of conversation he got up to take me in his car for a visit to the largest sugar factory in the world, crushing 15,000 tons of cane per day. In India even after the establishment of the sugar industry for the last 40 years, the crushing capacity of an average sugar factory is only 1,000 tons. In comparison, therefore, a crushing capacity of 15,000 tons of cane per day was breath-taking. When Migual Arango left his chair I saw that he had only one leg and had to use crutches to walk. I silently followed him and naturally was expecting that a chauffeur would drive the car as my host had only one leg. But, to my amazement, no chauffeur was visible. Arango got into the driver's seat, I sat beside him and he drove off. Later he explained to me, that with a little device, he could drive with one leg only. What he did was very simple. Two legs are needed to start the car. One to press and release the clutch pedal and the other to accelerate the accelerator. He used one leg for the clutch, and the hand throttle to accelerate the engine. Again two legs are required, one to press the clutch and the other to press the break pedal. These two pedals, he had connected together by means of a strip of steel, so that when he pressed the clutch pedal with one leg, the break pedal was also pressed at the same time. Migual Arango was consulting Engineer for a dozen factories

and when I saw him driving with one leg only, I despaired to find any chauffeur anywhere in the American world.

Central Havana — Central meant sugar factory in Cuba — was in fact not as big as I thought. The rate of crushing in the milling tandem was fantastic. The Harinagar sugar factory had two roller crushers and five mills of 30"x60" size. When I enquired how many tons per day such a milling plant should crush in Hawaii they told me, "About 600 tons per day". When I asked the same question in Cuba they replied, "Two thousand tons per day". So the vast difference in the rate of crushing by speeding up the peripheral speed of the rollers was quite opposite to the Hawaiian practice of slow crushing, and high mill extraction. When I discussed these contradictory trends in the milling practice between these two countries, Miguel Arango threw a challenge saying that he was not concerned what the Hawaiians did, but they could not compete with Cuba as far as cheap production of sugar was concerned.

Sugarcane grows wild in Cuba. The soil is of volcanic origin and highly fertile. The jungle trees were cut down leaving the stumps a few feet above the ground level, as it was found expensive to dig the roots out. The stumps were burnt, but were still standing like black ghosts in between the cane plants. The rich soil was dug up with hand spades, and cane setts planted with hoes; two setts side by side, just pressed into the earth, and that was the end of it. Cane grew year after year without replanting, and ratoons upto 30-40 years were common. The trash was left in the fields after harvesting and that was the only source of manure. No other organic or inorganic manure was added to the fields. To give an example I enquired from a Farm Manager, who was showing me a cane field, "when was that particular field planted?" He replied that he did not know. On being asked how long he had been there he said "30 years". "Then you should know when the field was planted" was my observation. He quickly answered back, "This field was planted before I joined". No wonder that Cuba, with its cheap cane and huge sugar plants, produces the cheapest sugar in the world. Mainly raw sugar was being produced for export to the United States where it was refined and distributed for consumption to the public. When return-

ing after seeing the largest sugar factory in the world I saw another factory in the distance and enquired about its capacity. Arango told me that that was a baby factory crushing only 5,000 tons per day. In India five sugar factories all combined, will crush that amount of sugarcane in one day.

It would be abundantly clear from the contradictory trends in Hawaii and Cuba regarding the rate of crushing and the importance attached to efficiencies, that the working practices adopted in different countries are based on peculiar local factors governing economic return and the respective profits. It is to be remembered that a sugar factory is not interested in making sugar, but in making money, and so will make its own calculations with that aim in view.

The main language in Cuba was still Spanish, as it was under Spanish domination for a long time before it came under the subjugation of the United States, but English was also spoken and understood quite commonly, and there was no particular language difficulty.

The sugar industry was by far the biggest industry in Cuba producing six million tons of sugar per season beginning in January of each year and ending in June. Arango gave an example of the prosperity of the cane harvesters who used to go to the cane fields for cutting cane with silk socks without shoes, meaning that they were tearing away the expensive socks with impunity unmindful of their cost.

After studying the farm and factory sides of the Cuban Sugar industry in sufficient detail, I sailed back to Miami, and then by train to Washington.

Back to the U.S.A.

Washington, the Capital of America, is a beautiful city with white marble buildings designed and built by Roman architects. The buildings are surrounded by wide and lush green lawns, studded with multi-coloured flowers, thus increasing the beauty of the buildings manifold by contrast. The facade of the buildings, all designed by Italian architects is massive and impressive. There are no factories in Washington as they are prohibited by law, and so the atmosphere was clean and free of any pollution. The Washington monument which stands high up in

the air with two big eyes and a pinnacle at the top was visible from everywhere from the pretty city. I also went to see Mount Vernon, a few miles on the outskirts of Washington where the brave and respected George Washington lived and died. His clothes and other things used by him were all preserved for public view. The surrounding park and the lawn were very well maintained.

The next stop was the famous and exciting New York, which I was waiting to see for a long time. Here the first thing I did was to take possession of the suitcase which I had checked — booking is called checking in U.S.A. — in Honolulu for New York. It had arrived safely, and on presenting the receipt I did not encounter any difficulty in taking its delivery.

There is no city in the world like New York. It is situated on the Manhattan island purchased by the Americans from the aborigines long back for a paltry sum of \$ 45/-. Due to shortage of land New York has leaped towards the sky. I remembered the Tower of Babel mentioned in the Holy Bible, when men started to construct a tower to reach God in his Heaven, and so went higher and higher. God in his anger sent down his angels to strike down the builders, who were beaten up and tossed down on earth to die, but others came and came undaunted. God was non-plussed for some time, but thought of a clever device, that of creating different languages, so that the builders could not understand one another, and so could no longer co-operate in their constructive effort. As a result of this, the scheme of the building of the tower of Babel fell through.

The same disintegrating effect is visible in India after the reorganisation of the states on linguistic basis, and India is being disintegrated in the name of integration. I feel sure that this step of our leaders will go down as a black chapter in our history.

In New York, buildings are like towers unlike any other city in the world. In fact my first sight of this city was very confusing. I could not understand what all those towers meant, as I could not conceive that they were just ordinary buildings for New York. After the year 1965, there are some 10 storey high buildings visible in Calcutta, but during 1938 when I visited America, I had not seen any building in India more

than a few storeys high, and as such it was quite natural for me not to imagine a city like New York. The tallest building was the Empire State 102 storeys high, served by two elevators, the first serving upto 80 floors and reaching there in 60 seconds. The other served from 80th to 102 storeys. On the top floor was a restaurant for light refreshments and snacks. The view of the city from the top looked like a scene from an aeroplane. The next highest building was the offices of the Chrysler Corporation who are the manufacturers of Pontiac and De Sotto cars. The Chrysler Corporation is much bigger than the Ford Company and manufactures the world renowned Cadillac car also. The Empire State Building is capable of accommodating 20,000 people, which is equal to the population of an average district town in India. The Radio City Music Hall for screening of films and other shows for entertainment, was an extravaganza of matchless construction and beauty. When exhibiting a film the sound was the same at every place in the big hall, as it emanated from small openings near every seat. This music hall could accommodate 6,000 persons and was located on the ground floor of the Empire State Building built by Rockefellers.

One morning I was sitting in a coffee house when an American came and sat opposite to me. He was glad to know that I was from India, Asia. I did not follow why he said India, Asia. I was told afterwards that the offsprings of a cross between the Red Indians and Negroes look very much like Indians and hence the confusion. There is another confusion also, because U.S.A. has a State called Indiana, and sometimes Indian is confused with a resident of the state of Indiana. So to make sure Americans confirm your identity by adding Asia to India.

The American gentleman got quite interested and asked me about Tagore and Gandhi. He did not know about Nehru. During the conversation I told him that India was a very poor country. He did not believe it and said, "Are you joking Mr. Agarwal". "Not at all," was my natural reply. At this he placed before me a copy of that day's *New York Times*, and showed me the front page having two photographs one of Rockefeller of America, and the other of the Nizam of Hydera-

bad. Their respective wealths in terms of millions of dollars were given, that of the Nizam being more than Rockefeller's, who was considered to be the richest man in the U.S.A. He then remarked, "How can India be poor when the richest man of the world came from that country". I could give no convincing answer except saying that India is a land of contrasts which he listened rather unbelievingly. On further talk I came to know that this gentleman whom I met by chance in that coffee house was a world explorer and he had been seven times round the world. He enquired from me whether I had been to Kashmir to which I replied "No". Then he asked me whether I had been to Switzerland. To which also I replied in the negative. As he had been to both the places I asked him how he compared the scenic beauty of these places. His reply was classic. He said, "Switzerland is beautiful, but Kashmir is more beautiful. In Switzerland Nature has been too much touched by human hand, in Kashmir you see naked beauty". Later after having visited both Switzerland and Kashmir I agreed with his remarks and observation.

When he came to know that I was next visiting England he told me that I had chosen a wrong route round the world. "After having seen America, what will you see in England?" I could not appreciate his remark. He continued, "You will find ladies riding on cycles in London". The elevators will crawl like a snail, and the building will be only three or four floors high. There is no hot water running in the bath room taps. If you want hot water for a bath you have to ring the bell. Then an ugly face will come and ask you what you wanted. You tell her that I want a hot bath. She will heat up a small bucket of water and keep it in your bath room. You take a scanty bath, and when you leave the hotel, you will find in the bill that you have been charged one shilling for every bucket of hot water". On visiting London I could clearly see that England was a much poorer country in every respect in comparison with the United States of America.

There is a very big park in the centre of New York known as the Central Park. It is two miles long and half a mile in width. Whenever I passed through this park, I saw some people sitting idly on the benches talking and smoking. Later I came

to know that they were either unemployed or old retired people, who had nothing to do, and so were whiling away their time in this manner. One day I was going through this park and per chance passed near by a bench, a young hefty American boy got up quickly from the bench and started to follow me saying, "Why did you come this way?" Naturally I was afraid and so started walking faster. He did the same. I was now almost running, but that fellow kept following me. That day I learnt what was the meaning of "Turning at bay". Seeing no way to escape I stopped, turned, and with fists held towards him in a real fighting mood I shouted, "What do you mean?" At this he also stopped, was toned down immediately and said, "Nothing, you are my friend", and walked back with quick steps. My heart was pounding, and the whole body covered with perspiration. But his turning away brought my strength back, and I hurried out of that Great Central Park never to visit it again. I could not estimate what could have happened if the boxing started. I was quite untrained in the art, and also was much weaker than the adversary and then in a country 12,000 miles away from my motherland, all alone by myself. In the thirties there were very few Indians in America, and during my whole trip in that country, I did not meet a single countryman. In my school days I had seen a few times how when a kitten was chased by a dog, and seeing no chance of escape, the kitten would turn at bay with gnawing teeth and raised tail, at which the dog would also stop and walk silently away. I got the same experience in the Central park thousands of miles away from home.

Hyden's planetarium in New York was something new to see. I was told that the Hyden's was the only planetarium in the world at that time. Naturally, I went to the Hyden's planetarium for a visit. The hall was lighted with electric lights, but when the show started, lights were slowly switched off, giving the impression of the evening creeping in. And then the stars shone at the fall of night. A lady was explaining the position of the stars with the help of a light arrow. During her talk she pointed out two stars and remarked that those two stars were coming nearer and nearer and one day they would collide. As she uttered the word "collide", there

was a terrific rumbling sound like thunder, and lightning shot forth to almost blinding brilliance. Children started weeping and ladies started whimpering. But it was soon over, there was a feeling of satisfaction and delight when the lady commentator said in a loud and clear tone that we should not be afraid, as the collision will take place 10,000 years hence, and so will not take place in our life time.

Trams were plying in the main streets of New York, with the only difference that the electric connection with the mains was not overhead as in India, but underground in between the two rails. Another modification or improvement was the folding step which opened out when the tram stopped for boarding, but folded up as soon as the tram restarted. The trams carried big advertisements saying, "Travel by trams to avoid parking worry". In America proper, where on an average, every two men have a car, parking is a great headache. To cope up with traffic New York has trams, buses, underground railway called sub-way, and also elevated railway running on masonry pillars through the city. Jokingly I say that New York has communication on the ground, underneath and in the sky. Most of the buildings have underground basements for parking cars, there are car parking buildings also where your car is lifted by an elevator high up, and parked as if in pigeon holes, and brought down on demand. Of course, these are all commercial car parks and you have to pay for it.

Sugar factories are mostly located in the countryside where sugarcane is available. Wherever I went in the United States I saw that the electric poles were made of wood. I was surprised to find that New York city had also wooden electric poles. On enquiry I was informed that these poles were made of Red Wood which is so hard, that a nail made out of this wood, could be driven like an iron nail in other softer woods. The red wood tree lives for 300-400 years. I remember to have seen a tunnel grooved out through the trunk of a huge red wood tree when driving to Hollywood from Los Angeles. The age of the red wood tree can be judged from the number of rings on the horizontal cross-section of the stem. I am put in mind of a beautiful example of a red wood tree by Dale Carnegie in his book "How to Stop Worrying and Start Living".

There was a very robust red wood tree in California, which withstood for many years all the violent storms and the cold blizzards that blew over it bravely without suffering any damage. But then slowly and slowly small insects ate into its stem, so much so, that one day the proud red wood tree, which had borne all the cruelties of nature so boldly for a long time, came crashing down only with a mild gust of wind. In the same way, man weathers many storms patiently, but some day allows himself to be broken away by insignificant and unimportant happening of his life.

The Statue of Liberty on the Hudson river is a landmark in American history. It is graphically described as 'a substantial figure of a lady', but dwarfed by the magnificence of the skyline, and from the deck of a ship sometimes it may be missed. The Manhattan island has an area of twenty-two square miles only, having a rock base on which the skyscrapers can soar up as high as technology will allow. Boundless vivacity and verve are the inspiration of Manhattan. In its midtown streets you are in a world of spirited movement and colour. Broadway, Fifth Avenue and the Empire State Building, are household names throughout the world. Anything that fancy can demand and money can buy is available in New York. America is the land acquisitive, and few Americans give up the search for wealth, or lose their admiration for those who find it.

Statue of Liberty

American author Julian Hawthorne has described the Statue of Liberty as: "The bronze goddess stands motionless and firm. She has stepped forward, halted and raised her torch into the sky. Her aspect is grave almost to sternness, yet her faultless features wear the serenity of power and confidence". It stands 93 metres high dominating New York harbour and represents "Liberty lightning the world".

Descendent of an Italian family, but born in France, the artist Bartholdi conceived as symbol of Liberty, a girl, with a torch in her hand, who jumped over the barricade erected by Napoleon's army, crying "Forward", and was gunned to death. In 1876 when America was to celebrate its centenary of independence, the French people seized the occasion to offer

a special tribute to the young republic by erecting the Statue of Liberty. Bartholdi offered his talent as a sculptor, and the statue began to take shape.

The pedestal was provided by the Americans, and the statue by France as a collective work of two friendly nations. The unveiling ceremony took place on October 28, 1886, when America's President Cleveland declared thus: "The mark of affection and esteem by the people of France assures us, that in our efforts to persuade humanity of the excellence of a government based on the popular will, we shall always have beyond the American continent a firm ally". Since that day the Statue of Liberty has been a part of American national heritage.

A visit to the world-famous Niagara Falls is an overnight journey by train from New York, and is a must for any tourist. These falls are formed on the Niagara river when she flows from Lake Erie into Lake Ontario from a height of 150 feet, and forms part of the boundary between Canada and the United States. One-fourth of the great falls are in America and the rest three-fourths in Canada. The breadth of the falls is 4,000 feet, and a huge mass of water cascades with great splendour and magnificence. The scene in the night, when the falls are lit by their own light in multi-colours, beggars description. At one place there is a lift for going down 150 feet to view the falls from below, in order to appreciate them from another vantage point. Before going down the tourists are given water proof clothes to put on, as the fine mist is blowing all the time and is likely to drench them.

Another tourist attraction in the vicinity of the Niagara Falls is an eternal flame burning for many years. Some kind of combustible gas is emerging from the womb of the earth and burning at the ground level.

On the 4th July 1776 American Continental Congress declared North America to be free and independent of Great Britain, and this day of independence is celebrated in America with great enthusiasm. I happened to be in the States on this day in 1938, and wondered whether we Indians will also have an independence day to celebrate in the near future. It was a surprise to the whole world when it did come on the 15th

August 1947, perhaps much earlier than expected, because only a few years back Winston Churchill had declared in the House of Commons that he had not become King's first Minister to preside over the liquidation of the British Empire.

Hitler was also very much in the air in America at the time of my visit. Particularly the American ladies talked about him with fear and misgivings, so much so that a lady told me, "Mr. Agarwal, Hitler will be a name to frighten children universally". This is an example of Hitler's terror in the hearts of Americans on the brink of the commencement of the second world war in 1939. Jews were despised, or held in low esteem. They were described as interested only in making money, and would run away at the sign of the least danger. They never identified themselves with any country as Motherland or Fatherland. When talking of Jews, I am always reminded of Shakespeare's Shylock, the despicable Jew in the *Merchant of Venice* who will gloat in having a pound of flesh, instead of money, to wreak vengeance on a charitable man.

Before leaving New York for England, I had to obtain an income tax clearance certificate from the American Income Tax Department. This I came to know when I went to book my passage to England by a steamer. The officer in charge asked me to show him the Income Tax Clearance Certificate. "What", I uttered in amazement, and a little disgust. "Income Tax Clearance Certificate from me who has come to the United States on a Tourist Visa". "Yes Mister, but since you have a tourist visa, there will be no difficulty. You go to the Income Tax Department, and they will grant you the desired certificate without much fuss." It was true, as I got the certificate within half an hour of my visit to the income tax office.

The United Kingdom

S. S. Aquitania, the steamer by which I sailed for England was a huge big vessel weighing 55,000 tons, although *S. S. Elizabeth*, by which I wanted to sail was bigger weighing 83,000 tons. These were both British ships. *S. S. Normandy* was another steamer as big as *S. S. Elizabeth*. In 1938 these two were the largest steamers afloat on the high seas. *S. S. Aquitania* had a swimming pool, cinema hall, tennis court,

gymnastics, shops and what not. The reason why these biggest ships were plying in the Atlantic and not elsewhere, was that the Atlantic is the roughest of oceans, and smaller vessels simply tossed about much to the inconvenience of the passengers, so much so, that drinking any beverages was almost an impossibility without spilling and spoiling ones clothes. *Acquitania* was luxurious and comfortable, as I did not suffer from seasickness, which comes mainly from the rocking motion of the boat, dependent upon the degree of the roughness of the sea. Every evening there was a cinema show and dance after dinner.

I found that taking into consideration the comfort of living and the quality and quantity of food, the steamer voyage is extremely cheap. If you live in a hotel on land with the same facilities, it will cost you at least twice as much excluding the steamer fare. I have still with me specimens of the Menu of food served for breakfast, lunch and dinner, and it is simply fantastic. There were at least 50 preparations at lunch and dinner, out of which you may select any course and it will be served. The left-overs were dumped into the sea, and that was the reason why many birds travelled perched on the steamer, here and there, picking up the rejected food from the sea, when it was thrown. It appeared to me a great waste, but perhaps the world could afford it during the good old days, which now would be considered as criminal.

The voyage on a steamer is a very relaxing experience. There is nothing to do except eating, resting and sleeping. Nobody stays in his cabin. As soon as you board a steamer, you must reserve a chair on the deck, where you spend most of the time, sitting, talking and eating snacks. I found that except the English people who are known for their reservedness, almost all the passengers from other nationalities are quite communicative, and eager to exchange ideas and knowledge with you. A middle-aged American was my neighbour on the deck chair; after a day or so we got rather familiar and talked on various matters of mutual interest. One day he offered me a cigarette. I told him that I did not smoke. In the evening he offered me a drink to which also I said politely that I did not drink. After dinner, he asked me to go to dance, to which also I replied in the negative. Now he could not

restrain himself, and remarked in amazement, "You do not smoke, you do not drink, you do not dance, it appears that Indians do not know how to enjoy life". I agree that if these are the norms of enjoyment, we really do not know how to enjoy life, but there are norms and norms suited to the genius of every nation and civilisation, and if material affluence was the only yard-stick to measure happiness, I would not see Americans in saffron clothes, with shaved heads, and bare-footed singing Hare Ram Hare Krishna in the streets of Calcutta.

S. S. *Acquitania* berthed at the Southampton port, from where I took a train for London. I found that all passengers got down at the Waterloo station, but I was sitting tight to alight at the London station. One fellow passenger enquired from me as to where I wanted to go. "London of course". He politely informed me that that there was no London station, and you have to go to London from Waterloo. It reminded me of Calcutta as there is no 'Calcutta' station and you have to buy a ticket for Howrah to reach Calcutta. This also reminded me of the plight of a gentleman who was appointed by Raja Narayanlal to join his sugar factory in Champaran, Bihar. This gentleman went to the Victoria Terminus station at Bombay and asked the booking clerk for ticket to Champaran. The booking clerk delved into the list of stations, but did not find any station by the name Champaran. Frustrated this man had to go back again to the Harinagar Sugar Mills office at Kalbadevi and narrated his experience at the station, when he was told correctly that the station was Harinagar, but the district was Champaran. In the same way the district is Saran, but the headquarters are at Chhupra. This nomenclature in Bihar is different from the nomenclature in Uttar Pradesh, so we had also some difficulty in the beginning to follow the new system of the naming of the districts. Later when I visited Assam in 1972, I discovered that the system of naming the districts was similar to Bihar, as for instance Gauhati is the district headquarters of Kamrup district and Silchar of the Cachhar district.

So I detrained quickly at the Waterloo station, hired a taxi, and went to the Y.M.C.A., where I was comfortably accommodated in a single room. When checking my luggage, I

discovered that my camera was missing, which I had left in the taxi while getting down. I informed the lady at the counter about my loss, at which she asked me the number of the taxi by which I came. When I told her that I did not know the number, she asked me wherefrom I had come. I told her "Waterloo". She then gave me the address of the lost property office where the taxiwallas will deposit any lost property. In the afternoon I anxiously went to the lost property office, but there was no trace of my lost property, and as I wanted to immortalise my visit to the various places still to be visited, I had to buy another camera, but the loss of my camera in London still lingers in my memory in spite of all the stories of the honesty of the British people, which did not apply in my unfortunate case.

London at that time was the biggest city of the world, having a population of 8 million people, but now Tokyo in Japan has beaten London with a population of 11 million inhabitants. Trams were plying there but quite a few tram lines were being dug up and removed, and on enquiry I learnt that the trams created too much noise when running on steel rails, and so were being removed. I had a bitter experience of the intensity of noise created by trams when I was living on the fourth floor in Kalbadevi street in Bombay. The trams ran till 12 midnight and again from 4 a.m. For some days I could not get sleep, as when the tram passed underneath, the noise was similar to the noise of a train approaching a platform where you were standing. Now I am living in Calcutta where trams are still plying and perhaps are the cheapest form of transport in India, the noise made by them is no doubt unbearable. With the importance now being given to air pollution, noise pollution has also become a subject for research and it is said by the scientists who now say that noise pollution is even more damaging to health and nerves than air pollution.

Man has a wonderful power of accommodation, and although I could not sleep in the noise made by the trams, after some time I was able to sleep well. This power of accommodation is both a blessing and a curse. Man gets accustomed to a slowly growing atmospheric pollution, and does not feel any deleterious effect immediately, but the pollution does its work slowly and

steadily poisoning the whole blood system. In an experiment a bird was kept in a closed room and the atmosphere of the room was slowly polluted. The bird died in 15 days, but another bird, fresh from the clear atmosphere outside, when brought into this room, died immediately. So also delicate instruments have been invented to measure the intensity of noise and its effect on the nerves and human health, and every attempt is now being made to reduce it.

The underground railway in London is really underground. The underground railway in New York is just a little under the ground and is correctly called 'sub-way' there, but in London it is quite deep and rightly designated as 'Tube Railway'. At several places one has to go down in a lift and at other places to move down on the moving stairs called escalators to reach the station. If it is early morning almost every passenger will have newspaper in his hand, which he will scan for a few minutes, and leave it back on his seat when leaving the train. In India if one gentleman buys a newspaper the whole compartment will borrow and read it by turns. Once while travelling in India it was just morning time when the train steamed into a station. A newspaper seller passed by. The gentleman sitting next to me enquired from me if I would like to buy the newspaper, to which I replied, "Yes". The gentleman was good enough to call the seller, took possession of the newspaper, and started reading it, while I paid the price.

London was the first place during my trip so far where I saw so many Indians and got a feeling of familiarity and confidence after being all alone all these days since I started from Bombay nearly 4 months back. I was particularly delighted because all varieties of Indian food were available in London. There were several restaurants belonging and run by Indians where papadam, pickles and betel leaves were being sold. I was a little surprised to find Indians in Indian restaurants eating with knife and fork, but I did away with that formality, and ate with my hands in the familiar Indian style, with great gusto.

There was one Indian hostel in Gower street. If you asked a policeman where it was he would reply in his characteristic style, "Walk two blocks to the right and then three blocks to

the left, and then you can smell it". The smell was the peculiar smell of Indian condiments and onions and garlic with which the Indian dishes are prepared.

I was very amused to watch stump-orators at the corners of Hyde Park, standing on table tops and haranguing to crowds collected all round. The subjects covered a wide range from politics to social life and what not. It occurred to me that Jesus Christ was also using some kind of table when talking to the crowds 2000 years back, because when some one from the audience enquired from him as to whose was the Kingdom of Heaven, He picked up a child from the crowd, planted him on the table and declared, "Of such is the Kingdom of Heaven". Wordsworth has also given vent to the same idea when he said,:

"Heaven lies about us in infancy,
Shades of prison house begin to close
upon the growing child".

In 1932 when I was a student of Agra College, Andrews-Dube, who was an earnest member of the Servants of India Society, told me that he was shocked to see the behaviour of English people in Hyde Park. I had that in my mind, so I intentionally avoided secluded places in the park lest I come across some unseeable sight.

Madame Tussaud's collection of wax models of eminent people in Marylebone are worth a visit by every tourist to London. They are so life-like that it is hard to believe that they are models and not actual live persons whom they depict.

England being so cold and foggy almost throughout the year, daily bath by the English is unknown. If you ask an Englishman he will say that he is a regular bather which means that he takes bath once every week. The English landladies consider it quite a new and embarrassing practice when the new arrivals from India bathe every day. As regards their clothes also I saw that they were not so clean. The collars of overcoats or mackintosh, which they use both for rain and winter, were usually quite dirty. The pantaloons had hardly any crease. It appeared to me that we in India are more fussy about our clothes.

The English habit of not using water after toilet, and not washing the mouth after eating, cannot be called hygienic practices, and it is amazing how their attention is not attracted to these palpable anomalies in this age of science and technology. In this connection I am reminded of an interesting anecdote. An Indian invited an English friend for dinner, and inadvertently the food was rather hot with chillies. Next morning when the Englishman went to attend to his morning calls, he had much burning sensation, and when he came out of the W.C., the first thing he told his wife was "Now I have understood why Indians use water and not paper, the damn paper will catch fire".

I met the first beggar of my trip so far, when I was standing in a queue for a drama ticket in London. The beggar was versed in the sounds of several birds and animals, and was imitating them to the entertainment of the passersby. I was informed later that here and there one comes across beggars in England, although it is nothing in comparison with the beggary in our own country.

England feels proud of its history and America of its newness. Buildings like the Parliament, the British Museum, the Tower of London, are not cleaned, colour-washed or painted from outside, so that they may look old and historic, while in America old buildings are face-lifted, painted, and white-washed to appear new. Not so old buildings are completely pulled down and new ones erected in their place at huge cost to maintain the look of modernity and newness.

No sugarcane grows in England due to its cold and unfavourable climate, so England refines imported raw cane sugar from the Commonwealth countries and its colonies. I saw a sugar refinery in England where the process of refining was the same as in the United States with the difference that the control instruments were made in England. Cane could be seen in England only as a museum piece in glass hot houses attached to the agricultural research farms.

It gave me a feeling of great elation to get my shoes polished by whites first in Amercia, and then again in England. Although it was much cheaper to polish your own shoes, but I liked to spend on this item. I did it intentionally to get rid

of the feeling of inferiority complex, so dexterously planted in our minds by our former rulers.

France

After having finished my short visit to London, the next place on my itinerary was Paris. Some of the American passengers who were going to Paris had told me that they were going to Paris to learn culture there, and so I was also looking for signs of culture while in Paris. I took a ferry from Dover to Calais, and then a train to Paris. As I was travelling through Thomas Cook & Sons, the internationally known Travel Agents, I always sought their assistance in booking my hotel accommodation through them in the city of next halt. And I can recommend from my personal experience that that was the right thing to do as cases of deception and theft occur the world over if you are not cautious. There are crooks and thieves every where. As for instance, in England also I read quite often here and there, "Beware of pickpockets". If you tell the taxiwalla after coming out of a station to take you to a hotel, he will at once know that you were a stranger, and strangers are exploited all over. But if you ask him to take you to a certain hotel where you have got a room reserved, he will treat you differently. And as for hotels, there are hotels and hotels. Some have good service and absolutely reliable, but there are others of doubtful honesty and safety, where you may be robbed or even meet with violence. When travelling abroad, and for the matter of that, travelling anywhere, it is advisable to book a place in a reliable hotel in advance, and if not practicable, to know the names of a few good hotels where you can stay safely, even if you have to pay a little more.

I am very sorry to record that I was advised before I left Indian shores to be very cautious of Indians in Paris, who will come to you and offer you help. Naturally you will be very happy to find your own countryman in a foreign country, but he will play confidence tricks upon you and put you in trouble, deprive you of your money or steal your luggage. Another very common trick in Paris is the selling of obscene literature, whose sale is prohibited there by law. During the process of purchase a policeman will appear there, as if from nowhere, ques-

tion you and pretend to arrest you for your illegal conduct. You have to get rid of him by greasing his palms. It appears to me that this is a practice prevalent everywhere in the world, because the medical books deal with a certain disease of the hand in which the palm turns backwards, and it is described as "a police man's hand", in the posture of accepting a bribe surreptitiously. In Paris this accommodation difficulty is augmented by the fact that hardly any English is spoken in the whole of France and Paris was the first place so far where I felt the language difficulty. There are some hotels and shops which carry a signboard saying, "English Spoken", and there is somebody who speaks a little broken English. If you per chance go to a hotel where nobody speaks English, you will be at sea. When leaving Paris, I could not know from anybody which train to board, till I went to Cooks, and sought their assistance.

If you go to a good hotel in Paris, you will find that the service is very slow while you are lunching or taking your dinner. One day I went to the famous restaurant Maxims in Paris for lunch. I was rather in a hurry as I had to keep an appointment, and so desired to finish off the lunch as early as possible. The bearer came, took my order and disappeared. He came after nearly half an hour with the soup plate. Soup finished, again a long gap. I got impatient and expressed my displeasure at such a slow service in such a reputed restaurant. The waiter was unmoved and told me very politely with a bow, "Monsieur, we do not like our guests to go away early". In this way I got the first dose of French Culture. Further 10 to 15 per cent service charges are charged on your bill, and you have to pay an additional 10 to 15 per cent as tip to the bearer, which means approximately 25-30 per cent over and above your bill. On enquiry whether the tip was compulsory, I was told that it was not compulsory, but was customary, but for all practical purposes it was compulsory. When you go out of your country, your consciousness as an Indian or as a representative of motherland increases manifold, and you have to be careful not to tarnish the good name of your country. Under the circumstances, the prevalent customs in those countries have per force to be adhered to keep up the image of India.

Paris is no doubt beautiful and very scenic, and there are a number of things of tourist interest to be seen. Folies Bergere and Moulin Rouge are the renowned night clubs well known for their naked dances, but I could not muster enough courage to visit any of them.

Arc de Triomphe attracted my attention. It commands a magnificent sweep of the Champs Elysees, standing as a hub of a vast wheel, the spokes formed by 12 broad avenues running from it to all corners of Paris. Victor Hugo once called it "A mass of stone on a mass of glory". It is the largest triumphal arch ever built, and stands the equivalent of 15 storeys high. Napolean commanded it to be built in 1806 to honour the revolutionary armies, and the foundation stone was laid on 15 August, his thirty-seventh birthday. Then the fall of Napolean in 1814 brought the construction to a grinding halt, and resumed only in 1823. The Arch was inaugurated on July 29, 1836. It was the fulfilment of 30 year's effort, the legacy of a few determined men, and the labour of thousands of anonymous hands. In 1840 the remains of Napoleon were rested under the monument he had so grandly conceived. In 1921 a flag-draped coffin of France's Unknown Soldier was lowered into the ground beneath the Arch, and on November 11, 1923 an eternal flame was lit at the grave, which is still kept burning. Ever since all heads of the state coming to Paris have made a pilgrimage to the Arc de Triomphe to lay a wreath on the grave.

The blackest day in the history of the Arc de Triomphe was June 14, 1940 when in the morning the German troops climbed to the top of the Arc, and unfurled a great Swastika. It was to fly over Paris for the next four years. On August 25, 1944, the tricolour was again hoisted on the top of the Arc, and General de Gaulle rekindled the eternal flame. This Arc is still the repository of French nation's deepest emotions.

The last decades of the seventeenth century saw the transformation of a hunting lodge at Versailles into a palace which has never been surpassed in splendour. Built by Louis XIV as a monument to his own glory, and a home for his enormous court, it is now visited by millions from all over the world. Twelve miles west of Paris, in a vast and romantic park, stand the

noblest palace of the Western world. Enriched by three centuries of pageantry and art, Versailles is a monument to the glory of France. Louis XIV believed in the Divine Right of Kings, which also carried with it a duty to build magnificently and live splendidly. So through his long reign of seven decades, the noise of hammering and scraping never ceased. As many as 35,000 workmen were engaged at a time, and millions of gold francs poured out. What had been a marshy land, became a fairyland, offering miles of groves and walks, hundreds of statues and fountains, and a palace which at times housed 10,000 people. Versailles was built on a site with no water, but Louis spent millions of francs, employed the ingenuity of the best engineers, put 30,000 soldiers to forced labour, till a network of reservoirs, canals, and subterranean conduits leading from sources many miles distant, the water gushed sparkling.

After several ups and downs and the revolution in 1789 King Louis Philippe decided to turn the palace into a museum in 1830. Splendour and glory reign supreme in the gardens of the palace which Voltaire once described as 'A great caravan sarai filled with human misery and discomfort.' Louvre, located in the Ancient palace of France, now contains an art museum of unmatchable beauty and collection and every tourist who visits Paris goes to the Louvre to see this piece of art and pageantry.

I noticed that even proper names of cities are translated, which to me looked very ridiculous. As for instance, the English call Pari as Paris, while the French call London, Londres. In the same way in the English usage what we know as Milan is Milano, Rome is Roma, Venice is Venezia, and Munich is Munchen. Why the names of the cities should have different names in different countries and languages has never been comprehensible to my understanding.

Now a word about Thomas Cook and Sons, the International Travel Agency, with offices all over the world and whose travellers' cheques are accepted like currency notes all over the globe. I had taken Cooks travellers cheques in pound sterling and dollars, as I was advised that these two currencies will be accepted everywhere and I would have no conversion trouble anywhere. To begin with, I used to go to the offices

of Cooks to convert the money, but later I experienced that even small shop keepers in Havana accepted it readily without any demur or hesitation. This great organisation had a very humble beginning. There was a school boy by the name Thomas Cook who used to arrange small picnic parties of his own class, and then divide the expenses. His management was so efficient and cheap that boys of other classes also requested Thomas to arrange their parties also. From his school, his reputation travelled to other schools and so on and on, and slowly Thomas Cook formed a company which grew into an International organisation of great reputation. An American Travel Agency by name American Express was born as a copy of Thomas Cook, and now has expanded throughout the globe, but not to the same extent.

Switzerland

My next place of visit was Switzerland, but as the time at my disposal was short I was desirous to see the most beautiful spot in that country, I was advised by Cooks to visit Luzern. There is no language difficulty in Switzerland. As this country is a tourist attraction it is visited by tourists from all over the world and particularly from the USA. Even the porter at the railway station spoke four languages, English, French, German, and his own.

When I went on a visit to the high hills the next morning in a station wagon, I found two Indians sitting behind me. Naturally conversation started. The gentleman was Barua, the film director and the young lady was the famous Jamuna of 'Devdas'. I had heard neither about Barua or Jamuna of Chandidas, but in order to be courteous just smiled as if I had placed them to their position of importance. I had my first experience of snowing when we reached nearly the top of the mountain. The snow came in white cotton-like flakes, and rested on our heads and shoulders, which fell when we shook it off with a jerk. I am sensitive to cold, but I was surprised that in spite of snowing it was not unbearably cold as I had conjectured. - I was excited, made snow balls and threw them at the other fellow tourists who all took it good humouredly. Jamuna unfortunately, was wearing open sandals

with woollen socks, and so soon got frost bite on her toes. She could no longer walk and had to be carried to the station wagon by Barua.

Switzerland has no standing army, only a minimum of permanent staff, 500 officers and 1000 NCO's. In an entire regiment the commander may be the only full time officer. This results in a militia system which is unique in the world. From the age of twenty all able-bodied men become citizen soldiers on call for military duty throughout their adult life.

The roots of this sort of militia date back to the middle ages when every Swiss bore arms to preserve his freedom. Every militiaman is given a helmet, a weapon and ammunition to keep at home for the duration of his militia career. He also secures the field grey-wool uniform. When a recruit comes back home after a 4 month's basic training, he is considered to be a full-fledged soldier. This system is so effective that in case of an emergency, in just 48 hours, the Swiss can mobilize 600,000 men, one-tenth of the population. Today the battle force is as ready as ever, but for strictly defence purposes. The Swiss never think of 'Victory' but only of 'Security'. The Swiss army costs the Government only 2.5 per cent of the Gross National Product as against 6 per cent and above of other Western countries.

Swiss neutrality is internationally recognised, and no invader has marched into the country since Napoleon. The seat of the League of Nations and the United Nations, and in fact all international neutral conferences and confabulations has been mostly Geneva in Switzerland.

Just as there is no standing army in Switzerland, there is no conservancy force either. Every citizen has been burdened with the responsibility to clean the front of his home including the road, so that the cities and towns are specimens of cleanliness free of cost. At this stage I am reminded of the filth and heaps of garbage everywhere in Calcutta. I am living in a posh locality of south Calcutta, surrounded by high executives of foreign firms, but during the last three years since I am here, I have seen not even one day the foot paths free from stinking rubbish. All the garbage of the bungalows is mercilessly thrown on the foot paths and the roads, faster

than the corporation can remove, as the speed of its disposal is always behind its accumulation.

My father was always fond of West End watches, particularly the pocket variety. Naturally, when in Switzerland, I was desirous to see this famous watch company, but on enquiry it was revealed to me that there was no such watch company of any appreciable dimensions, as the watch industry, in Switzerland is a cottage industry, something like the bangle industry in Firozabad (India). There are a number of highly skilled artisans, who are manufacturing different watch parts in their own cottage scale small factories, and then they sell them to bigger manufacturers, who simply assemble them. It is considered in Switzerland, that the machines cannot compete with the accuracy and the finish of the parts as made by the dexterous artisans. As such I had no chance to see the West End Watch Company of my imagination. Swiss watches are renowned the world over, so I went to purchase a few watches for my relatives and friends.

Another town Caux is a place of international reputation in Switzerland, as it is the headquarters of the Global Moral Rearmament. This organisation is doing yeomen service in the spread of morality in the present day world of losing moral standards. One of the principal jobs of the organisation is the unification and harmonisation of the couples who are on the verge of divorce and separation, and I understood that many homes were saved from destruction, and under the influence of the M.R.A. the husbands and wives reconciled so well that they lived in peace and goodwill later in life.

Italy

My next stop was Venice from where I had to take a steamer back to India, and thus prove to myself that the earth is round. Venice was unlike any other city I had seen so far. There are hardly any roads. Most of the traffic is by means of small boats called gondolas gliding in the water canals. The gondola is so intimately adapted to the nature of Venice that it is difficult to imagine the city without it. Fast, strong, and perfectly shaped, the gondola embodies all the water-borne magic of Venice; and the agile singing gondolier has for

centuries been a central part of the Venetian legend, transporting sober citizens about their business, or lovers to their secret assignations. There are now only about 400 gondolas against a few thousands in the sixteenth century, but since a ride in one, is a prime experience of any Venetian visit, and since they form in themselves one of the great tourist spectacles, they are unlikely to disappear altogether.

If you have to purchase anything in Venice, you will be astonished that they will initially demand three to four times the actual price, just as in Srinagar in Kashmir. I did not meet with any haggling in America or in England. I felt there was some bargaining in France as I discovered afterwards that they had overcharged for some purchases in that country, but Italy was terrible. I purchased a leather belt in Venice for 50 liras for which the seller had demanded 200 liras to begin with. In the same way I paid only 30 liras for a nut-cracker for which the shop-keeper had asked 100 liras.

The grand canal and the Marco Polo Square are worth a visit in Venice. In the Marco Polo Square, there are thousands of pigeons who will come and sit on your head and shoulders, when you give them some feed as corn which was being sold by Italians for the purpose. The scene was very similar to the one I had seen in Trafalgar Square in London, where also you see thousands of pigeons all over the place.

In London I had purchased a ready-made woollen suit, but as it required some alteration, I had left it with the tailor who had promised to send it to Venice. I was expected to find it in my cabin on *S. S. Conte Rosso*, the Italian steamer, by which I was booked to sail back to India. Although I had fully paid the price of the suit in London, I agreed to this arrangement, but I had my own doubts whether the suit will be found in my cabin. In the same way, I had arranged in Paris with a photographer that he should also send my photo when ready, to Venice on board *S. S. Conte Rosso*. Naturally as soon as I boarded the steamer I hurried to my cabin to find whether both the things were there or I had been duped. To my great and anxious relief both the things were lying on my berth. I thus, per force, had to develop a feeling of confidence in their honesty and efficiency.

Back to India

I left Venice on 10 November 1938 by *S. S. Conte Rosso* of the Lloyd Triestino line. Indians preferred to travel by this Italian line as the atmosphere was more homely in comparison with the steamers of the P & O line run by a British company in which most of the British passengers travelled with their stiff necks. There were several Indian passengers on board, two of whom became quite familiar with me during the 11 day's voyage to Bombay. One of the two was Lt. Moti Sagar, who has recently retired as Deputy Chief of the Army Staff, and the other was a lady Dr. Damyanti Bali, a doctor from Lahore who had gone to Vienna to specialize in gynaecology.

Two incidents which Dr. Bali narrated to me will ever remain fresh in my memory. One was about a small Austrian girl of the family in which Dr. Bali was living in Vienna. The small girl had become quite familiar and rather attached to the doctor. When about to leave for India after the completion of her studies, Dr. Bali was having a little fun with the small girl. The doctor told her, "I am now about to go back to my country India. So we will make a small boat, sit in it and sail for India". The girl, at this, was visibly filled with fear and shouted, "No, no, I will not go to India. What about the cannibals there, they will devour us". So here once again, I became aware of the success of the vicious propaganda of the English people to tarnish the image of India throughout the western world.

Another incident which Dr. Bali told me was about a family in Lahore. The doctor went to pay a courtesy call to a friend of hers at tea time. A six year old son of the hostess was behaving so well that his trained and disciplined behaviour drew the admiration of Dr. Bali, and the latter praised his mother for the training. When the mother went inside for some work Dr. Bali enquired from the boy how much he loved his mother? The boy was furious and blurted out, "No question of loving my mother, I hate her, and when I grow up, I will cut her throat". The doctor was dumbfounded. This was an extreme example of trying to over-discipline a child.

.There was a jolly Hungarian and he organised a tournament of Deck Quoits. The game is played with rings made of coir rope, called quoits, and thrown from some distance to concentric rings marked out on the deck. The placement of the quoits in those rings score numbers, and the player who gets the highest number is the winner. It was a cheap and interesting game to kill time. It was noticed that a few English people, who were also travelling by our boat, were not mixing at all with other passengers, but keeping strictly aloof. Even when we were passing through the Red sea, and it was extremely stuffy and closed, the English came to the dining hall with full dinner jacket etc. while all the other passengers just came in shorts and shirts. Seeing this I was put in mind of a story which a professor of mathematics had narrated to us while I was studying at the Agra College, Agra, around the year 1930. He said that there was a shipwreck long ago. The ship was completely gone, and some of the passengers swam ashore on a desert island with no population at all. The French, the Austrians, and the Hungarians all combined together, and survived with common endeavour and mutual assistance, but the three Englishmen died all separately, because they were never introduced. This English character might have been imbibed as a result of their complex, because they once ruled over an Empire over which the sun never set.

So back to Bombay on 21 November, after a round the world trip of just six and a half months. My wife with her brother, and a few representatives of the Harinagar Sugar Mills were at the pier to receive me. I felt very fortunate to be back in India after such a long voyage, all alone quite safe without any untoward happening.

My first deep impression of my round the world trip was that the English people had fully succeeded in tarnishing India's image throughout the length and breadth of the globe. The examples I have cited, here and there, will fully illustrate my view point. India was considered to be a big wild country where lions, snakes and spiders were found everywhere, and cannibals roamed the streets. I also experienced that Indians were not welcome anywhere in the world, because wherever they went, they brought down the standard of living. An

example will illustrate this point. There was a large shop of an English general merchant and tobacconist in Nairobi, Uganda, Africa. He used to open his shop at 10 a.m., went for lunch at 1 p.m. came back at 3.30 p.m. and finally closed his establishment at 6 p.m. After some years a Gujrati Bania from India opened a similar shop close by. He used to sit in his shop from early morning till late at night, and also sold his goods a little cheaper than the Englishman. The sales of the Englishman's shop went down. One day he was sitting rather morose in the club. On being asked the reason of his moroseness, he blurted out, "My sales are going down, my profits are declining, how can I compete with the bloody Indian who is sitting the whole day in his shop, and even late at night people wake him up for a match box, and he wakes up and gives it with pleasure". Wherever Indians have gone, they work hard, and live cheaply, so that the whites are beaten. I have already in an earlier chapter narrated the opinion of an American who hated the Chinese because they worked too hard. I know that the same thing happened to the sugar factories owned and run by the Britishers in India when new factories were established by the Indian industrialists, after the grant of protection after 1932. The English people had more experience to begin with, but with their fixed notions and strictly routine working, they started to feel the pinch of Indian competition, and the profitability of their sugar factories declined, so much so that they had to sell out their factories with the advent of Independence.

I also came to know that the stamina and the bravery of Indian troops was admired because the Indian soldiers could fight for 4 days with one kilogram of parched grams in their pockets, while the white forces were fatigued if they did not get breakfast in time.

3

LIFE BEGINS

I was born on Christmas day 25 December 1910 at Etawah in my ancestral house in the old city. I was the third child, the first and second being Hridaya Narain and Chaturbhuj Narain. I was thin and rickety as mother's milk was insufficient, and the powdered milks, so profuse in the market today, were unknown in the middle class families. The mothers also could not so freely fondle with the children as today, because they were rather shy and little afraid of mother-in-laws to dote and bestow excessive fondness upon the children as is now the vogue. The fathers did not and could not touch their children in presence of elders, and I do not remember that my father ever took me in his lap, and for the matter of that any of the five brothers and one sister. Fondling children in the presence of senior members of the family was looked upon as very inelegant in those days.

My great-grandfather Lala Jisukh Rai was working with the famous firm of Lala Pirumal of Allahabad, who were carrying on, besides other business, insurance business for insuring waterways traffic for theft, fire and sinking. As there were no railways and no good roads, much trade and commerce was carried through boats sailing in the big rivers, particularly Ganga and Jamuna, which were long and navigable. Lala Jisukh Rai was posted at Patna, which was one month's trek from Etawah by pony. Days were fixed for starting journeys in different directions on different days of the week. This was practised as a matter of safety, as highway thefts and robberies were very common, and it was considered as very unsafe to travel on the prohibited days because on those days no fellow

travellers will be met with on the road, and so the chances of being robbed and manhandled increased manifold. To my mind, the superstition of not travelling in certain directions on certain days, still adhered to by many older people, is based upon this custom of the ages gone by, but naturally, under the changed circumstances has no relevance now. I must give praise to my mother, who though a believer in Disa-Sul, did not utter a word when I set sail from Bombay on my round the world voyage, on 5 May 1938 which according to the past custom was a prohibited day to travel. She told me about it only when I came home safely after six and a half month's trip around the globe. And I feel sure that this event must have cured her to a very large extent of her superstition. As for myself, I have religiously avoided to learn the days of Disa-Sul, because human mind is so weak, that if you know about it and then break it, there is a lingering fear inside which sometimes disturbs the mind and may land you into trouble unnecessarily.

After the death of Lala Jisukh Rai, my grandfather Lala Bansi Dar was appointed in the place of his father at Patna, but he was rather young and afraid to go that far. He was therefore, first called to Allahabad, and then sent to Patna, per force by Lala Pirumal. Such was the kindheartedness of the moneyed persons those days. After reaching Patna, my grandfather settled down firmly in his seat and remained in the service of the reputed firm for many years. At the time of the mutiny of 1857 he was at Patna. He got very anxious about his family at Etawah. All communication was disrupted in the days of the mutiny, so Lala Bansidhar took hold of a man of a nomad tribe, gave him a letter on a small piece of paper, which he hid in his smoking pipe, and started for Etawah, a one month's trek from Patna. It has always been a mystery to me how he reached our home at Etawah, gave the letter, and carried back the reply of safety to Patna after a lapse of two months. He was paid Rs. 5/- at which he was very pleased. Such happenings are like fairy tales in these days of jet travel. I have always admired the courage of my grandparents, who worked for their livelihood so far away in the old days. This example of the grandparents

has always given us a moral boost and courage to go anywhere for work and livelihood, and we have all prospered, as the distance from home never stood in our way.

At this place I cannot resist the temptation of narrating some idiosyncracies of the rich people of the past. One Rai family of Banares were fabulously rich in the time of Queen Victoria. When the English people were able to put down the mutiny or the first war of independence, as it is called now, there was a proclamation from the Queen that no Rais in India was allowed to ride a carriage with four horses, and if he disobeyed the order, he would be fined Rupees one lac. The Seth of the Rai family neglected the order and rode in his 4-horse carriage. He was thereupon fined by the district magistrate. The fine was immediately paid. Next day he again rode in the same carriage. Again a fine of Rupees one lakh was levied, which was promptly paid. This happened on four days continuously, when the District Magistrate was completely flabbergasted, and sought fresh instructions from the Queen. Queen Victoria was a great administrator. She thought over the matter and informed the District Magistrate of Banares to fine this time only one rupee. This was imposed at which the Seth was greatly insulted and stopped riding the four-horse carriage.

In another anecdote a Rais of Allahabad was in the habit of drying his Mohars or Guineas every year during the summer season. A certain percentage of dryage was fixed by him on the weight basis, and this loss in weight permitted his staff to make so many Mohars per year under the smoke of dryage. Another Rais was in the habit of asking school children to storm some sweetmeat shop, and eat as much sweets as they liked. Then he would compensate, more than the loss, to the irate shop-keeper. We do not hear of such pranks now.

My father started legal practice in Etawah in the year 1902. He was educated first at Etawah, then at the Agra College, Agra. Later he passed his Vakil examination from Allahabad. He was the first graduate in our whole family, as in those days higher education beyond Etawah was very rare. My father Dharma Narayan practised at Etawah till 1914, when he decided to shift to Mainpuri, where there was a judge's court, and

more scope for legal practice. It was a very bold decision for him to leave his rather well-established practice, and move to a place where he had no contacts. I was only 4 years old when father shifted to Mainpuri, and I have hardly any remembrances of the early childhood in Etawah. In Mainpuri we were living in Naini Babu's garden just on the outskirts of the town. The house was of garden type, but my father made it comfortable by erecting temporary grass roofs here and there, which, though not so nice to look at, were cool in summer. We made them prettier by planting flowers all round, and creepers to cover the grass roofs.

My father was, from the beginning, no party man, and so he pulled on well with every body including Brahmins and Kayasthas who were the two major groups, and rather antagonistic amongst themselves. Both the groups gave full co-operation and assistance to my father, and soon he established a lucrative practice at Mainpuri. When he retired in 1948, he told me that one of the secrets of his success in the legal profession was that he did not accept cases which were apparently false, and to plead which, recourse shall have to be taken to falsehood all through. This also contributed to his success in the cases, and also augmented his reputation as a man of principles.

Our shifting to Mainpuri proved to be a boon in some other ways also. The Agarwal clan in Etawah was well known for its orthodox ways and the method of living was also archaic. The ways of life and customs were very outmoded and tied down too much by tradition and custom, based upon superstition, which had no reasonable basis behind it. By going to a new place, we were, as it may be described, out of the cage in fresh avenues and pastures new. Still we did not entirely break away from the moral and religious background, which has remained with the whole family throughout our lives and made us better citizens comparatively. It is a matter of pride for me to record here that in the three generations, (Father, we, and our children), so far nobody smokes, drinks, or plays cards, although we brothers, and our children have led free and unfettered lives both in India and abroad. I have always felt keenly that the discipline comes from within, and if the internal

discipline is well established due to heredity and early breeding, it guides and protects at every step later in life, and inhibits sinful ways of life. In this connection I must mention the immeasurable beneficial effect of the Sunday religious meetings that my father used to hold without any break in the evening. The whole Mainpuri public knew that Vakil Saheb and his family were not available for any other function on Sunday evenings. We all, children and elders of the family were required to cancel all engagements on Sunday evening and attend the meeting. I fully remember that I hardly understood or followed the proceedings, but I can testify with certainty, that sitting in that atmosphere had its effect unconsciously on the subconscious mind, and created an inward strength to meet the eventualities of life in later years when we grew up, and faced the realities of life and living.

My father did not plunge in any party politics or elections of any kind, as those did not suit his temperament or bent of mind. I remember, once he was approached by all parties combined to seek election to the chairmanship of the municipal corporation, and they even persuaded him to only agree to his nomination, as he was going to be elected unanimously without any opposition. I had come from the college on holidays, and when I heard of this unanimous election, I was tempted to request father to accept it. But he was adamant and flatly, politely and courteously refused, while bestowing his best gratitude for the honour that the city was going to confer on him.

I was admitted in the Mission High School which was only two minutes walk from our house. There was another high school run by the government, but it was nearly one and a half miles off, and as such was very inconvenient to attend without proper and regular transport arrangement. The Mission school was run by the American Presbyterian Mission with Mr. Mitchel as its manager, and Mr. Ganguli as its Head Master. Both the Manager and the Head Master were extremely fine people and their presence did much to boost the reputation of this school, both regards its discipline and education.

I still remember with respect the names of a few teachers

who were capable and sincere, and who made my foundation firm in most of the subjects. I particularly remember Mr. Jackson who was teaching me English in the third class. This was the class in which ABC of English was started. Mr. Jackson was extraordinarily conscious of the importance of correct English pronunciation, and he inculcated it so much in our minds that I entirely owe my good pronunciation to the initial foundation laid by Mr. Jackson.

Another remarkable teacher was Pandit Ghamandi Lal, perhaps true to his name. He was teaching English and grammar after the sixth class. He was a master as far as parsing was concerned. I was his favourite student as I was good in parsing. He had made Hindi couplets, which served as formulae to give guidance in correct parsing, and it was due to his instructions that I got cent per cent marks in parsing even in my intermediate examination at the Agra College.

The role of teachers will not be complete without mentioning the name of the revered Panditji Damber Lal. He was a Chaturvedi belonging to old Mainpuri, and was the Head Clerk of the school. He was our private tutor for many many years. He taught both my elder brothers, then myself, and then my younger brother Shriman and my sister Padma. He used to teach us nearly all subjects till the sixth class, after which we were left to ourselves. He was paid throughout the year, for the holidays and vacations all included, and no account was ever kept of his attendance. Besides the parents, in truth, it was Pandit Damber Lal who had the maximum influence on our education and character. After leaving Mainpuri in January 1948, I had no occasion to meet him and give him my respects, but Shriman, when he was Ambassador in Nepal, had the opportunity to visit Mainpuri, and I am told that he went to touch the feet of this venerable teacher. The respect for such Gurus came from within and not from without.

I have very great respect for the humanitarian work that the Christian missionaries have done in India and the world. I have seen personally how they were taking care of the sick and the maimed, and even lepers, tending the running wounds with their own hands, which the patient's own kith and kin were afraid to look at. Mr Wallace and Mr Wiser, two American

missionaries, were living just opposite to our house in Mainpuri, and we were witness to the selfless service they were rendering to the community at large, without distinction of any kind. The underlying idea to convert them into Christianity was, of course there, but that did not take away or detract from the humanitarian service that the missionaries were giving to the public. The conversion to Christianity was not coercive but persuasive by winning their hearts through service and all round assistance. So many untouchables, whom the Hindus detested, were educated and rose to high positions of esteem due to the kind treatment they received at the hands of missionaries.

I am here reminded of the true story of a missionary in Nagaland some time back, narrated to me by the Director of Sugarcane Research to the Bihar Government, Mr K. L. Khanna. Mr Khanna had gone to Nagaland to spend a few days with one of his friends who was stationed in a forest in Nagaland. One evening the friend took Khanna to the hut of an American missionary, who was living amongst the Nagas, in that secluded part of the country. The missionary was very highly revered by the local Nagas. Khanna saw that the missionary had only one leg, and he walked with the help of crutches. On enquiry he learnt that a few years back when that missionary arrived there, he was looked upon with suspicion, and one day the Nagas collected in a body, amputated the leg of the missionary with a sharp weapon, roasted it in the fire in his presence and ate it. But the missionary persisted to convert them and love them, so much so that now they do nothing without taking his permission and all call him "Father". Such service and persistence is unknown except in the missionary world.

Recently I have been to Assam and Nagaland, and it was a pleasant surprise for me to know that in Nagaland, Mizoram and Arunachal there were 90 per cent Christians and that the percentage of literacy was one of the highest in the country. It was hard to believe how in these parts, so to say, separated from the civilized world, the missionaries went and lived and won the hearts of the hill people, and served them, through education, health, and community service. I went to Shillong and as far as Cherrapunji, about which I had read in my early

school days to be the wettest place in the world, receiving 500 inches of rainfall per year. Luckily it was dry on the day of my visit, otherwise the road becomes risky to drive, and the car may skid to a depth of a few thousand feet into the valley. The traffic is only one way due to the narrowness of the road, but it is now being widened and before long the traffic will operate both ways. I saw for myself that amongst the Mizos, the bridegroom comes to the house of the bride after marriage, and so the women are more important than men and dominate over them. You will find that in the shops the lady is the master and the husband looks like her assistant.

The same thing happens when the wife is either much richer than the husband or wields power and authority. While in Paris in 1938 I saw a picture "Queen Victoria". Her consort, Prince of Albert, felt his inferior position all the time. One day he was sitting in his bedroom when Queen Victoria knocked at the door. The prince enquired as to who was there. Victoria replied "Queen". He did not open the door. She knocked again, and again the same question. This time she said "Victoria". The prince of Albert still did not open the door. The Queen was very shrewd and understood what was going on in the mind of the Prince. On a third knock she spoke softly, "Your wife", and the door flung open. In another scene the Prince came angrily one day to the Queen and shouted, "I am the master of the mistress of the house, but I am not the master of the house".

It is a matter of regret for us that we Indians prefer to send our children for education to missionary schools and our patients to missionary hospitals, because we feel more certain of better, cheaper and fair treatment. The missionary spirit is proverbial the world over, and it is this spirit which we should all imbibe if we wish to become better Indians and better citizens.

Coming back to the school again. Mr Mitchel used to read a portion of the Holy Bible every day before the school began. I heard it with interest and also read the Bible in the Bible class held once every week for all students. During the terminal examinations there used to be a Bible question paper also, although passing in it was not compulsory. I used to do this

paper very well and Mr Mitchel built up hope that one day I may embrace Christianity. But when I left the school after passing the final examination, he was very disappointed.

I was a good and serious student from the third to the tenth class, and stood first in the final examinations in order of merit. It was rather a rare combination that I was a good player also, so much so that I was the hockey and cricket captain simultaneously, and that record has not been broken.

It is not good for a teacher to be extra harsh and always beat the students on the slightest pretext. Such a teacher was Mr Charles. During my whole student career, he was the only teacher who gave me a slap when I was in the seventh class, and which I still remember as it was a solitary one. Mr Charles was teaching geography, and I must confess that he taught well, but that could have been possible even without such beastly treatment. Whenever it was his turn to take the class all the children used to pray that he might fall ill or something else may happen to him, so that he may be incapacitated from taking the class. And whenever it did happen, all the boys shouted with joy, and some extra jovial ones even distributed *Prasad*.

Before I take leave of the teachers, I would give an instance of the goodness of the Head Master. One day, just after the usual prayer one student was to be caned by Mr Ganguli for moral turpitude which was in those days considered to be the worst type of dereliction for any student. After completing only five canes Mr Ganguli collapsed, and had to be carried away in his office for rest. He was very kind-hearted and averse to punishment, and such an extreme type of punishment was too much for him to inflict. His health was never so good, and I was shocked to hear of his demise a year or so after leaving the Mission School, which built up in me a good foundation, both educational and moral, to face the wide world with confidence and success.

Every Saturday was a half day for the school, and as an extra-curricular activity, a meeting was held in which generally there was a debate to train boys in public speaking. I took an active part in this activity, and it was due to this initial foundation, that I was the best speaker of the Agra College

from the intermediate to the M.A. classes, and represented it in all-India elocution contests at Lucknow, Allahabad, and Banaras, and won prizes. This art of public speaking stood me in good stead even in my career as Sugar Technologist, because I had the courage to get up and speak, while other technologists, who may be cleverer than me, were sitting with their mouths shut, even if they knew the subject and the answer.

My father took extraordinary interest in our education and all round training. We brothers were sent to Etawah during the summer vacations to learn swimming in the Jamuna river, which was about a mile from our home in Etawah. We used to go early in the morning on foot to the river, and were taught swimming by the teachers called Ghatwar in the local parlance. If one worked hard and took the necessary interest, one could learn swimming tolerably well in 15 days. The vacation lasted for more than a month, and so it was quite sufficient to become well versed during one vacation.

We were also taught wrestling, horseriding, cycling, music, photography, type-writing, and what not. On my own I was particularly good at picking up all these things, although other brothers except Chatubhuj Narain, did not do so well. When father was away at the court, I used to run along the 8 ft. high compound wall, and also climb the top of the highest tamarind trees. Father's return carriage from the court was visible from a distance from the top of the trees, and that was a signal to come down quickly, and stand on the ground innocently.

In our garden we had sufficient land to have a kitchen garden, and Shriman and I used to prepare the land and sow vegetables like lady finger, brinjal, cabbage, radish and the like, and I must say that they did quite well. At this stage I remember that when I went to Tundla with father for operating the magic lantern and show the slides connected with his lecture on scouting, Mr Bansal, the head master of the railway school, who was our host, told me that he had a gourd creeper which yielded him 300 fruits. I heard it with wonder, and considered the head master a big boaster. Many many years afterwards, when I was at Harinagar in North

Bihar, a gourd creeper, which I had planted to climb on our hut in which we were living during the erection of the sugar factory, yielded 300 fruits after which I stopped counting. After nearly 15 years I could testify to the veracity of the statement of Mr Bansal of Tundla.

My father was very particular about his food and habits, and so always kept healthy. Mother was following in the footsteps of father, and she also kept very well throughout her life, till she died at the age of 76, after a brief illness. Father lived to a ripe old age of 88, and I do not remember that he was ever confined to bed with sickness. I was by his bedside when he left the mortal body, and it appeared to me that he left it by his sweet will when his time on earth had expired. His blood pressure, pulse rate and temperature was normal, and the doctors were of the opinion that he may live for many more years, but the same night at 10 p.m. on the Guru Purnima day, 2 July 1966 he passed away. Father never in his life felt the need for allopathic treatment, did not take any injections throughout his life. He was not taking even homeopathic medicine as it contains alcohol. He entirely depended on Aryurvedic treatment, which he hardly needed throughout his life. He was a great man in the real sense of the term, alive to his duties to the family, the society, and the world at large, lived a clean and useful life, and slipped out of his physical body when it was time to depart.

Father and mother were married when still very young. At the time of marriage father was about 11 years old and mother was some 11 months younger. She belonged to Firozabad, a small town in Agra district, about 40 miles from Etawah. In the good old days, marriages were arranged at the nearby places, due to lack of communication and transport, by Pandits and barbers, who mediated and were given full credence. The description of the boys and the girls given by these mediators was taken for granted, and the negotiations materialised, and the marriages were solemnised on the reports of these intermediaries. As far as my knowledge goes, all the marriages negotiated in this manner proved successful, as against 30 per cent divorces in America, where marriages are settled after months or sometimes years of courtship and dating. It is said

that in India marriage is the beginning of love, and in the west it is the end of love. There are good and bad points of both the systems, and I have no intention here to go into the eternal controversies of the merits and demerits of both the systems. According to my experience so far, marriage will always remain a gamble, whatever precautions one may take before the final solemnisation.

Whenever we went to Etawah the monkeys there had always a great scare for Shriman and me. They come in groups, unafraid of man, and steal food and other articles from the houses. The Hindu veneration for the monkey, as the representative of the Hanuman, is responsible to a very great extent for all these depredations. But sentiments die hard, and many of the Hindu traditions are still being followed by even highly educated young men, without understanding the idea behind them, which in turn means that traditions have a kind of fettering quality in them and so they do not relax their grip on the people. Once we came back to Mainpuri after a sojourn of a month at Etawah. At this time the monkeys were extraordinarily active, and one day Shriman and I were surrounded by them on a lonely roof. The scare went into our bones, but I got over it after some time. Somehow Shriman was overscared, and even after 15 days he used to shout in his sleep, "Monkey, Monkey". I am not ashamed to admit that even now when the monkey is in a threatening mood, and makes scowling faces at me, I cannot bear to stand, and run away.

I was at Etawah once, when the Sharadh ceremony of my grandfather took place. A Chaubeji from the Jamuna ghat was invited to dine at our house. It is presumed that the food eaten by the brahmin reaches the ancestor, and mostly the preparations, dear to the departed soul, are prepared to satisfy him. Many Hindu customs can be explained by science, but there are some which are based on blind faith or incomprehensible tradition. The Sharadh ceremony, as far as it may be meant as a reminder of the departed soul, can have meaning and solemnity, but the feeding of the brahmin and giving him Dakshina is nothing, but a way of exploitation of the Hindu society by the brahmin community, who did nothing

but live on charity. I was a boy then, and was in charge of feeding the Chaubeji, who ate and ate till I was aghast, and it was an enigma to me to guess where all the food disappeared because the size of the guest was nothing unusual, nor was the dimension of his stomach anything to wonder about. But the food went in and in. The last course was *khir* (milk pudding) which he did not take in a glass or tumbler, but in a lota (jug) and gulped it all quickly down. Then I could not restrain myself and took a deep breath in astonishment. Chaubeji noticed it and wanted to know from me the reason of my surprise. Well I said to him that it was a wonder to me the way the enormous quantity of food vanished in his tummy at which he gave the following reply, "Whatever I eat or drink does not remain in the tummy only, but goes in all the veins, and what wonder is there in this small quantity of *khir* when Agastya Muni drank the whole sea to retrieve the eggs of the Titahri bird." I kept mum as I did not understand the reference at that time and age.

Having been married at the age of 10 and with the lack of female education in those days, my mother was only modestly educated, but she strived to read and write, and although she could not learn English, she acquired quite good knowledge of Hindi, in which she wrote songs and later poetry also. She was very active in the emancipation of women and was for long years the founder President of the Manipuri Mahila Club. The Mahila Club was organising a Baby Show every year during the Devi Mela, which was the biggest local fair for the city people and the villagers round about. There were several stalls in which school boys were engaged to explain the exhibits to the visitors. I was always one of them, and I still remember how nicely I explained to the villagers the ill effects of opium given to the small children, mostly by the village women to dope the child so that they could attend to the various household chores. There was a competition also in which the baby judged to be best was given a handsome prize.

My father also took great interest in the activities of public welfare. He was the District Scout Commissioner, and president of the various public committees for social welfare. He

was a liberal and was averse to politics in which he never took any active part. In fact he considered elections an evil of the first magnitude and so eschewed them altogether throughout his life. I was a member of the 'Seva Samiti Boy Scout Association, as against the Baden Powel Scout Association, patronised by the British Government. It was a very good movement and quite in vogue when I was in school. The training was alround, and made the scouts better citizens, and smart and alert boys with sturdy common sense. The boys below 12 years of age were enrolled as 'Cubs', and imparted almost similar training as the boy scouts with less rigour.

Rai Saheb Ganga Prasad, a Kayastha gentleman, and Kharajit Misra, were prominent Vakils when my father migrated to Mainpuri. As he kept away from party politics, he was loved and assisted by those senior lawyers and this contributed in a great measure towards the establishment of a sizeable legal practice before long. I was in Bihar for nearly 20 years as a Sugar Technologist, and I found that all politics was based on communal parties, mainly the Kshatriyas and the Bhumihars. The parties of Shri Krishna Babu and Anugrah Babu were well known all over Bihar, and elections were fought on communal basis. India is still in the grip of communalism, casteism, provincialism; and other 'isms, and unless all these 'isms are shed away, the functioning of true democracy will be impossible. I have seen in the villages, round about the sugar factories in which I worked, that all Panchayat elections were based on casteism, Roidas versus Brahmins and the like. And the bitterness increases after the elections, and the smooth working of the Panchayats is being handicapped at every stage in the wider common interest. I have also seen that the members of the minority party do not get a fair deal, but ways and means are discovered to oppress them as much as possible. So this lack of character raises its ugly head everywhere and militates against the welfare of the common man, and thus fails to achieve social justice in a wider concept.

Every year during the summer vacation, on a cool day, father used to throw a Bamba Party to all the members of the legal profession. It was a day of excitement for Shriman and me, and we used to get ready and talk about the impend-

ing party since morning. Father used to purchase sweets and seasonal fruits, and load them in our four-wheeled, horse driven carriage, and reach the Bamba (small canal) earlier than other Vakils. The sweets and the fruits were distributed while bathing, and it was great fun to cool the parched physical bodies and at the same time to put grub inside, in a jovial surrounding.

Another party that father organised was the Bati Party. Bati is a ball of flour cooked in Kanda (made out of cowdung and dried). There was one Chaturvedi who was quite an adept in this art, and he was always one of the invitees in charge of cooking. There were no inhibitions and he was permitted to use as much Ghee as he liked. He used to dump the cooked Baties in a bowl full of Ghee, so that the Baties were thoroughly soaked with the pure flavouring Ghee, imparted a shining inviting look to them, and rendered them attractive to the eye. The Dal prepared was always Urd with the skin in tact. This was also cooked on Kanda fire slowly and lot of Ghee was added to it also. The cooking and the party was held in our garden under shady trees with carpets to sit on. No spoons and other formalities of a formal party were observed. It was an extremely homely affair offering advantage of thorough relaxation in an easy and tranquil atmosphere. This party also was enjoyed to the full by all the participants and looked forward year after year with re wed interest.'

Shriman and I were very fond of keeping pups as pets, but mother hated them as they roamed everywhere in the house making it dirty and licking the utensils here and there, and sometimes would start sipping milk with their tongue and wasting it all. But we were adamant and mother with all her motherly instinct preferred to keep mum in spite of her disgust with our hobby. We were not helped to procure any good breed pups, so we just managed to catch hold of any pup found in the neighbourhood. Sometimes the servants assisted us in our search. We both tended them with great care and fondness and were always quarrelling with our mother to enhance the milk quota, which she sometimes did. We found that the pups drank milk till their sides bulged, and even then

they did not stop and had to be pulled away. Now I realise that the pups required much less milk for their full nourishment, and I was overfeeding them, so much so that most of them died of diarrhoea. One of the pups grew up, but acquired the bad habit of eating the night soil. It was therefore, decided to send it away to the court when father went thither along with the coachman. This was done. But the next day, to our surprise it found its way back to our home. There was no relenting, and the next step taken was to leave her far off this time to Shikohabad, a place 30 miles from Mainpuri. The pup was boarded in a train and left at the Shikohabad station. And lo! after a few days it was back again. This time everybody was full of mercy for the pup and it was kept. It is astonishing what sense of attachment and direction these small creatures have got that directed the little pup back home, after it was abandoned at a distance of thirty miles by train.

In another case a pup called Dash was taken very ill, perhaps again by overfeeding, and acquired the bad habit of jumping into my bed in the night and sleeping by my side. It was extremely annoying and dirty and so I used to beat him with my hands, and push him out of bed with my legs. One night my mother placed Surendra (my youngest brother) by my side without my knowing it. In the darkness I got the apprehension of Dash jumping into my bed. So I commenced beating Surendra and if he had not cried out, I would have downed him with my legs. In the morning I requested my mother not to play such tricks without my knowing it, otherwise there could an accident.

It will be interesting to mention at this place that no children were dressed with nappies like now in early childhood. Not only this, even to the age of 6-7 years no underwears were worn. We used to have only loose and long kurtas or shirts with nothing underneath, and it was considered to be quite in order. The consumption of cloth was very much less and I can say that we felt more comfortable, specially in the summer season. We also had no footwear in the house. Shoes were put on only when going to the school or while going out. Good shoes were not available at Mainpuri and one pair of shoes purchased from Agra, used to last us for one full

year. Chappals were not prevalent and I remember to have purchased one pair of slippers for a rupee and a quarter when I joined the Agra College in 1927. There was no use of soap for washing clothes at home. Pressing the clothes at home was unknown. The clothes were washed with plain water every day and then given to the washerman once a week or 10 days. The quality of whiteness and press was much inferior to the present standard, when small boys and girls, will not wear unpressed clothes even at home. Some very fashionable gentlemen were seen to simulate pressing by pouring cinders in a *lota* with flat bottom and then using it for a press in some marriage ceremonies, or other festive occasions.

We were not afraid of mother and did not care for her anger or protestations. Of course, we were very afraid of father, but he hardly interfered in our day to day affairs, and mother had full sway as far as the running of the household was concerned. Mother used to send me or Shriman to bring money from father for the daily expenses. He was keeping money, in silver rupees, in an old upturned cap, and gave us two or three fistfulls of silver rupees, and made us to count them by fours in heaps of 20 rupees. He also trained us to know which were genuine and which were not. These we brought from the upper floor where father was living, and gave to mother. She had an iron safe of her own, where she kept the money securely. She was always in the habit of keeping account of the daily expenses by writing in an Indian type of register correct to the rupee, the change below a rupee being entered as miscellaneous. She was keeping this change in an unlocked wooden box, and whenever Shriman or I needed any paisas for our small expenses, we took them out without the knowledge of mother, and she never knew that we had removed sonic small change. I do not know whether this may be called theft or not, but I am sure everybody does this to more or less extent in his childhood. Even a personality like Jawaharlal Nehru took possession of one of the two pens of his father Motilal Nehru, for which he was so severely punished by his father that he had to be in bed for two or three days. My father, I must admit, was much more kindly. He had a knife which was very sharp. In fact it was the sharpest knife in the household, and some-

times without his knowledge, I used it for sharpening my pencil. Being highly enamoured of it, one day I took possession of it, and when he made enquiries for it, I pleaded not to know anything about it, and in order that the knife may not be recognised, defaced it a little bit. After a few days when there was no more talk about it, I took it out and started to use it openly. Father naturally saw me using it and said that that was his lost knife. I showed him the defaced marks and tried to convince him that it was not the same knife. He snatched it away from my hands and admonished me not to play such pranks again. I was lucky to escape any other punishment.

One Lal Singh Man Singh Ashram was just near our house where Shriman and I used to go to learn music. The music teacher was Shri Patel, a blind person trained in the school for the blind at Bombay. He was sent from Bombay by Moti Singh who was carrying on cloth business near the Crawford Market. Not only Patel was teaching music but he was also running a full fledged Blind school, teaching the boys Braille, cane knitting, and of course music. It was quite a miracle to me to find that a blind man could teach chair knitting, play cards, and do other things, as if he had sight. Once I came during the summer vacations from the Agra college and went to meet Patelji after nearly three years. As soon as I entered the room of Patelji, he called out my name and complained that I had come after three years. It was absolutely incomprehensible for me how he could locate me, when I did not speak or did anything to establish my identity. On asking he explained to me that the sound of the footsteps tell him the identity. It is God's grace that the loss of one sense is compensated in making the other senses more sensitive, and in this case the sense of hearing required for distinguishing of the sound of footsteps had become very keen. Later I heard that Patelji had married a poor normal girl and his children had normal vision.

These days corruption is very much in the air everywhere. Father used to tell me that corruption was existent in the courts even when he started his practice in Etawah in the

year 1902, but it was not so persuading. Even the English Judges knew about it, but they used to overlook it as long as it did not affect their purse. One Pullen an English judge at Mainpuri used to say that that was not bribery. "He does your work and you reward him", was a kind of tip or bakshish and not corruption in the true sense of the word. Corruption today is still on the increase and where and when it will stop is anybody's guess. In this connection I always remember the Urdu poet who said, "*Marz ka had se guzar jana hai dava ho jana*" and I am hoping against hope that that day will come later than sooner.

Although I was the son of a lawyer, I had never been to any court till I became General Manager at the Shahganj Sugar Factory in the Jaunpur district in the year 1958. There, as Occupier of the sugar factory, I had to attend court in the Cane Act cases. In my first appearance in the criminal court of Jaunpur I was for all practical purposes virtually trembling, but the Cane Manager who accompanied me and who had quite some court experience, was trying to instill the lost confidence in me. After some time I also became a kind of criminal unafraid of the court atmosphere, because I saw that money makes the mare go, and if you can spend money a little freely there was nothing to be afraid of. The Peshkar would accept money without any hesitation in the view of the trying magistrate and give the next date of hearing according to your convenience. The sepoy or the constable who brought the summons, will not deliver it to you if the date does not suit you, and send back the summons to the court with the remark, "Addressee out of station" for a tip of Rs. 2/- and so on. As I had to attend court in five districts of Jaunpur, Faizabad, Banares, Azamgarh and Sultanpur, I acquired quite a skill in facing Cane Act trials, so much so that most of the cases instituted by the Government Cane Inspectors were dismissed or let off with a nominal fine. After leaving Shahganj in the year 1965 I got freedom from court appearance and I do hope and pray never to go to court again in this life.

I am convinced that Gulzarilal Nanda really made a most sincere and concerted attempt to root out corruption, and in the beginning there was some impact here and there, but he

could not keep up the promised progress, and the letter of resignation that he submitted, and which I read carefully, admitted in so many roundabout terms that Nandaji, who wanted to root out corruption was rooted out by corruption himself. After him nobody seems to have made the same effort again.

One more thing that I regret about the courts is about the date of the case. Only the date is given which means that one has to be present in the court latest by 10.30 a.m. on the particular date. It is not certain when the case will be taken up by the trying magistrate, and you have to wait and wait and watch the movements of the magistrate. There is hardly any place for you to sit or wait. It may be in some dilapidated verandah or under a tree outside in the sun and the wind, open to all the inclemencies of weather. You cannot go anywhere or do any other job, because your name may be called out at any time of the day. The least that the courts can do is to specify at least whether the case will be taken up before or after lunch. How much valuable time of the public is criminally wasted in this way. I say about myself, because as General Manager, Occupier and Chief Technologist of a sugar factory, I was an extremely busy man, but when I went to attend the court, it appeared to me that I was a bloody idler. Several times, at the time of the rising of the court, I would be informed that my case will not be taken up now and another date was fixed. So far for all practical purposes one busy day was killed so to say.

Ten miles from Mainpuri is situated a place known as Bhogaon. It is famous as a town of fools, and one or two stories regarding its name are well known. There were three folks who were grazing cattle by the side of a pond. One of them got a brain wave and asked, "If the pond catches fire where will all the fish go". The other companion replied, "Well, it is easy enough, they will all climb the trees". The third fellow was still brighter, he remarked, "Fishes are not cattle that they will climb the trees".

From childhood I have seen that the English people always followed the policy of "Divide and Rule", particularly in the case of Hindus and Muslims, the main two races inhabiting

India. In Mainpuri the percentage of Muslims was only 11 per cent, but at every Dussehra and Muharram, there was tension, and rumours of Hindu Muslim riot were in the air year after year, for no rhyme or reason, but on the most flimsy grounds. Sometimes it would be the route of the procession or music before mosque or any other reason against commonsense. Once I remember that there was more than usual tension, and father considered it safer for the ladies to send them to Gwalior, where uncle Badri Narayan was a professor at the Victoria College. But the Dussehra celebrations passed off peacefully and there was more than usual fraternisation.

The consequences of all this ill-conceived propaganda and strained relations for no convincing reason, caused the partition of the motherland in 1947, at the time of independence. And now looking back after 28 years of the creation of Pakistan and Hindustan, where are we? The feelings of enmity and lack of confidence are still there, and it will be realised in review that separation has solved no problems, but created new ones. It is like two brothers who dissolved the joint family to live happily after partition, but discovered that the mutual relations deteriorated after separation.

In my school days the name of Ram Murti was a household name for prowess and strength. He was known to let an elephant pass over his chest and stop a car from moving. As children we were praying that Ram Murti should visit Mainpuri also, and there was great excitement when his coming to our city was announced. We all went to witness the show, and as children we all enjoyed it thoroughly. I still remember the personality of the great and hefty Ram Murti with his strong and muscular body and his tricks of strength and stoutness. I do not think anybody of his strength and prowess appeared again on the Indian scene.

After passing the matriculation examination in 1927 in the second division, I joined Agra College, Agra, and stayed in the Vaish Boarding House, where my two elder brothers Hridaya Narain and Chaturbhuj Narain were already studying.

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AT THE AGRA COLLEGE

Agra College, at Agra is one of the oldest colleges in Uttar Pradesh, and if I remember right it was established about the year 1830, because I recall that its centenary was celebrated while I was still studying there. Another college was known as St. Jones College which had also good reputation, but it attracted more Christian boys than other communities. My father and uncles had all studied at the Agra college, and so it was quite natural that I also joined the same college where my elders had studied and two senior brothers were already studying. The Vaish Boarding House, where we all lived, was meant only for the Vaish community, and at that time there were altogether 50 seats in the hostel. There was quite a competition to get admitted into this hostel, as it had a very good reputation for its food. There were 5 messes consisting of approximately 10 boys in each, and managed by turns by its members for one month. The attempt was to provide best food at the cheapest cost. Chapatis were prepared in the morning time and puries every evening. Most of the other boarding houses were having chapatis both the times. Every Sunday there was special diet where rich pudding, fruit, curds preparation were common. It is interesting to record that when some boy had bad digestion and he informed the mess servant that he would not take food that time, the servant would remind him that it was a special diet, at which the boy will say "Yes" and would have his fill risking indigestion, although medically he should have avoided the heavy meal. At one time in our mess we were 4 brothers including Shriman, who also joined the Agra College one year after me, and my

cousin Pratap Narain who came to join the college from Etawah after passing his matriculation from there. With all the good food with its reputation in all the boarding houses, the charges per month came to a mere Rs. 12/- as the maximum. Of course the Ghee used with chapatis in the morning was not included in the charges. It was brought by the members from their respective homes. It was kept in their rooms, and the mess servant used to collect it from there just before the morning meal time at about 9.30 a.m. The college started from 10 a.m. throughout the year.

I had experience of the use of electricity only when I joined the college in the year 1927. There was no electricity in Mainpuri till the year 1947 when father retired from the profession, and started living with us who were all well settled in life. The boys from Rajasthan were even simpler, and they had also not used electricity before coming to Agra. It was said that some of them tried to glow the electric bulbs with matches, as switch was something unknown to them.

The boy who joined in the first year intermediate classes were called "First Year Fools", and there was a certain amount of ragging, but it was of a very mild type as compared with some of the undesirable reports from the colleges now. The old boys would disguise themselves in strange dresses, form in a group and come at the dead of night with musical band, play the band loudly and shout in unfamiliar voices to wake up the newcomers, who were naturally scared, but soon their senses returned and they also joined the procession to frighten the other boys. Sometimes a boy of weak nerves would run away with fright, and hid himself in some safe place till day break. Another very innocent trick was to make what was termed a 'Taj' in the room of a boy when he had gone to the college or elsewhere. Some senior experienced boys would open his room, collect his clothes and make an effigy of that particular boy. Other boys will lie in wait for him, and as soon he came in the vicinity of his room, there will be cries of joy and shouting to make a fool of him. These were harmless jokes and helped to make the new entrants familiar with the old boys, who treated all the new boys like their younger brothers and guided them in every manner.

The system of education was quite different in the college from the one I was accustomed to in the school. The professor came in the class, called the roll, gave his lecture and went away. There was hardly any personal contact like in the schools, where every teacher personally recognised and knew every student by face and name, and took interest in his studies and all-round welfare. The studies in the college depended mostly on the students' own efforts and application to work, the college lectures providing only a bare outline of the course to be assimilated. There were all kinds of professors, good, bad and indifferent, and the students gave them respect according to their ability and the manner of imparting their knowledge. There were no girl students in those days in the Agra college. Only in my final year at the college, the daughter of Shri Sethi, Head of the Physics department, was the only girl student. Education was segregated and co-education, which is so common now, was frowned at in those days.

There was a motley of students at the college, some very rich, some middle class, and some definitely poor. There were quite a few students who had no woolen clothes and passed the rigours of winter in cotton clothes. Others had jackets stuffed with cotton, which they wore under their cotton coats, to ward off the cold. The same was true of their ability and application to studies. I particularly remember one Kashmiri student by name Dhar, who had failed in his intermediate examination when I joined first year. He was still endeavouring hard to pass his intermediate when I passed my M.A. and left the college in 1933. For such students Professor Bhambani used to remark, "Long live my father, I will come to study again next year". Such boys were also popularly known as 'Lords'. This gives a clear indication that the students from the affluent class, who get everything for the asking, and see their father's wealth, do not feel the necessity of studying, and so do not exert at all. Education means to "draw out" the inherent capabilities of the child, and they cannot be drawn out if the effort and the seriousness is lacking on the part of the boy. Maithali Sharan Gupta in his famous book *Bharat Bharti* bemoans the attitude of rich mothers who desire that their children should not be compelled to study, because they

have no necessity to seek a job. The aim of education is to bring about an all-round development of the child so that he can be a better and useful citizen of his country and society, and it should not be narrowed down to the grooves of service only.

The warden of the Vaish Boarding House was Shri Chimanlal, who was also a professor of Chemistry at the college. He was very kind-hearted and treated the boys like his own children, and was always prepared to render advice even in their strictly personal matters. He later got a job as Head of the Department of Chemistry at the Jaipur college and left the Agra College and the hostel. Shri Jaiswal, lecturer in Physics was appointed in Chimanlal's place and he also proved to be an equally good choice. Before leaving, Chimanlal celebrated the marriage of his daughter from the boarding house, and all, the residents of the Vaish hostel, made excellent arrangements for the stay and hospitality of the *Barat* (marriage party) willingly and with pleasure. Chimanlalji made a special mention of these arrangements in his farewell speech.

In the year 1928 my younger brother Shriman Narayan also came to join the Agra College after passing his matriculation examination from Mission High School Mainpuri. He was a first class student throughout. He joined the Allahabad University after passing intermediate from Agra and rose from position to position till his appointment as Governor of Gujarat in 1967. Brother Chaturbhuj Narain was also at the Agra College and took active part both in games and the College Union. He was a member of the College Hockey eleven, and also secretary and afterwards President of the College Union. It was due to his initiative and encouragement that I started taking part in the college debates and remained the best speaker of the college for 6 long years till I left the college in 1933. I represented the Agra College in elocutionary contests at Agra, Lucknow, Allahabad and Banaras, and won several medals for excellent performance. This power of speaking, developed in the student life, stood me in good stead throughout my life so far, because it gave me confidence to get up and speak. Dale Carnegie has spoken in the highest terms of this quality of speaking, so much so that he says, "greatness gravitates to the

man who can get up and speak". Realising its importance myself, I took pains to train up my younger brother Surendra Narain, who is now a member of the Central Board of Direct Taxes at New Delhi and also my son Dr. Atul Narain who is an eminent eye, ear, nose and throat surgeon in Calcutta. This art of speaking is a must for any leadership and must be imparted in the school and college education period. As for myself I could not have become what I am without this power of being able to get up and speak.

My eldest brother Hridaya Narain was also at the Agra College and living in the Vaish Boarding House along with us. He studied History for his M.A. and also passed the Law examination. In those days M.A. and Law were allowed to be taken up simultaneously. Law classes were held in the evening after the regular college hours, and so it was quite convenient to do both the courses in two years. He started legal practice along with father at Mainpuri, but did not like it. Later he was Revenue Officer in the U.P. Government, served as Public Relations Officer at Rampur, and now is the Managing Director of an Export-Import firm and Legal Adviser of Assam Carbon Products Ltd., Gauhati with headquarters at New Delhi.

Brother Chaturbhuj Narain joined the sugar industry in 1933 in Bihar, and rose from position to position till he was a voice to be reckoned with in the Bihar Sugar Industry. He was General Manager of Sugar factories in Champaran, North Bihar, and I am sorry to record that due to hard or rather over-hard work, his health broke down so much so that he passed away into peace on 24 February 1967.

Basant Panchmi used to be the biggest festival in the Vaish boarding house every year. There were sports, drama and a mock convocation to wish well to the senior students who were going to appear for the B.A., B.Sc., and M.A., M.Sc. examinations in April of that year. Small introductory speeches were written about each and every examinee and they were all given humorous titles by the University of Love and Humour depicting their particular idiosyncrasies. Kali Charan Agarwal, who was for some time Deputy Minister of Agriculture in the Sampurnanand Ministry in Uttar Pradesh was my senior

and expert in writing introductory speeches on the examinees. His English expression was excellent and delivery superb. He also took active part in the activities of the college Union and was its President for one year. He came to stay with me at Shahganj Sugar Factory where I was General Manager, and assisted me and my wife in pushing up the establishment of a Girls' school there. We have kept up the link and of and on we exchange letters regarding our activities and welfare.

One Ram Babu joined the first year when I was in B.Sc. He came from Mathura and was extraordinarily fat. With all his bulk his voice was shrill and low like a lady. Poor boy, he became the target of attack. One day a tailor brought his shirt after tailoring. Some boys saw it, and they took possession of the shirt from the tailor. Five boys, so to say, entered into the shirt and went to Ram Babu's room shouting that his shirt had been received after stitching. Ram Babu felt extremely embarrassed, but what could the poor fellow do against such odds. I am sorry to say that after a month or so, he could bear it no longer and left the college and the boarding house. Being unusual, in any way, is a great curse, and the world at large will make fun of it and enjoy at the cost of the victim. It is spoken of the fat people that they are good humoured, which they have to be, because when beaten, they can neither run or retaliate. Most fat men get so much accustomed to teasing that they become all-proof against jokes and sarcastic remarks, and when they reach that stage, nobody troubles them. The human psychology is to bother the man who gets angry, and not the man who enjoys it and does not mind it. I have seen some Sikh gentlemen who themselves narrate their own jokes.

Following in the footsteps of my elder brother Chaturbhuj Narain, I took active part in games, particularly hockey, and was included in the first eleven. Next year I was unanimously elected Captain of the Agra College Hockey Eleven, a great honour. I had the rare privilege of playing against Dhyan Chand, the Indian hockey wizard, when he brought his team from Jhansi to play against us. His stick-work was marvellous, and his carrying the ball was straight and not curved. I bulleyed with him several times in the game, but could never snatch

the ball from him. He was a juggler with the ball. With all his wizardry in hockey I have always felt sorry, that being an Indian and an ordinary officer in the Military service, he never got the recognition he should have got as the best hockey player in the world. Then, India was at the top of the hockey world, and easily defeated the team from any country, not by one or two goals, but more than half a dozen goals or so, but now other countries have come up including Germany, Holland and Pakistan. Some mention is made in the papers regarding politics in the game also as a contributory factor in the deterioration of our game, but I am not directly aware of any such tricks, though am inclined to lend credence to it, because Politics is too much with us in all spheres of life, so much so, that the eminent Jurist N. A. Palkhiwala recently said :

One Indian: a genius

Two Indians: a quarrel

Three Indians: a catastrophe.

Ours has been a family with moral and religious tradition and the tradition was sustained and developed further by my father by his example and regular Sunday evening religious meetings, which unknowingly, strengthened our moral fibre and kept us from falling into the worldly temptation to which many people easily fall a prey. Ramchandra, a son of Babu Gulab Rai, the noted Hindi critic and author, brought to the boarding house one Sadhu by name Swami Ramdas of Kasaragod, south India. He addressed the inmates of the boarding house for about half an hour and then gave some time for any questions. I asked him some questions that arose in my mind at that time and he gave answers, which I found very educative and so are being reproduced below:

Q. Why God has separated us from Him to suffer?

A. You have yourself cast a veil before your eyes, and so say that God has separated you. Remove the self-imposed veil, and you will be face to face with God.

Q. I want to join the Servants of India Society to make myself useful to my Motherland. What do you think about it?

A. Men make Societies and Societies do not make men.

Q. Why don't you wear shoes?

A. I used to wear shoes, but whenever I went to a temple for Darshan after removing the shoes outside, shoes were more in the mind than the God. One day the shoes were stolen, and since then I left to wear them.

Later Swami Ramdas visited our house in Mainpuri, and was much impressed by my father, so much so that when Swamiji wrote his famous book *Vision of God* he spoke of my father in very complimentary terms as regards his evolved soul and great culture.

Babu Gulab Rai was a great Hindi critic and writer. He also wrote a few books of Humour. If you saw him, it was impossible to guess that he was such a humorous personality. He was Dewan of Chhattisgarh state and after retirement from there took up lecturership in Hindi at the St. John's College, Agra. Babu Gulab Rai was a class fellow of one of my uncles, and so loved me like his own son. He made a house in the new professor's colony near the Vaish Boarding House, and I had the privilege to go and give my respects of and on. Later he contacted diabetes and died at a ripe old age. I always remember him as the jewel of a man, a man of great erudition and learning, and a man of spotless character.

I was a versatile student at the college, a good student, a forceful speaker, captain of the hockey first eleven, and a member of the college first net in tennis. Principal Fielden, was so much impressed with my achievements that he wrote in my testimonial, "Mr Agarwal is one of the most prominent students of the college at the moment". Coming from a very conservative Englishman, this was looked upon as a rare compliment. Mr Fielden was teaching English Literature and was looked upon as quite an authority in his subject. Another English celebrity visited Principal Fielden some time when I was a student of English Literature in the post graduate classes. The Principal was kind enough, not only to inform me abo't the visit of Mr Edwards, but invited me to have tea with him at the Principal's bungalow. After tea I requested the guest to pose for a photograph which he did. Later I sent a copy of this photo to Mr

Edwards in England saying that the photo did him justice. He replied back, "I do agree that the photo does me justice, but what men need in this world more is not justice but mercy."

H. Krall, Head of the Department of Chemistry was another British professor. He was short, well built and a little out of normal. We used to call him Band Master. After the retirement of Principal Fielden, Krall became the Principal, but he was a poor substitute for the glamorous Fielden.

Lala Bishambher Lal, a very pleasing and unassuming personality, was the Professor of Chemistry. He was a good teacher and commanded great respect from all students without exception. Shri Rama Kant Chaturvedi and Mainu Lal Misra were teaching mathematics. They were both very sincere teachers. Shri Shyam Sunder Chaturvedi was teaching English to intermediate classes and worked quite hard at it. I was very happy to meet him, about three years back, at Saharanpur Paper Factory where one of his sons is still a Welfare Officer. In my days, the teachers both in the school and the college, were held in great esteem by the students, and the students in return received the affection and assistance of the teachers. The time has undergone a metamorphosis and the relation between the tutor and the taught has undergone the same change. It appears to me that human values have changed, or perhaps, Man himself has changed for the worse with an all-round deterioration in character and morals, and the quality of teachers and students is a general reflection of the precipitous fall in the quality of human society.

Chandrapuri Goswami was a senior professor of English Literature. The word 'professor' was in vogue for all teachers who were teaching in any college. The difference between a Lecturer, Reader and Professor, so much prevalent now, was hardly known to the students at that time. Chandrapuri had good command of his subject, but had a peculiar habit of smacking or making a sound with his lips at the beginning of every sentence. The sound was loud enough to be heard by the whole class. Another teacher of English to the B.Sc. classes was one Mela Ram. He had joined only a few months earlier from some college in Delhi. The B.Sc. students do not gener-

ally take any interest in English, and the subject was also optional i.e. it was not necessary to pass in that subject. Besides Mela Ram was unable to control his class, and the boys were playing all kinds of pranks with him. Pieces of chalk were thrown to hit his turban when he was teaching, and when he enquired about the source of the missile nobody would answer. One day the boys planted a chair with one broken leg for him, and as soon as he entered the class and sat on it, he had a great fall like Humpty Dumpty. His head with the typical turban fell on the feet of a student sitting nearby, and he had to be extricated by four boys. He did not lose his temper this time, demonstrated great control, and simply said, "I hope it was just an accident and none of you have played any mischief." After this incident the Professor cooled down quite a bit, changed his attitude of overbearing demeanour, and the students reciprocated his gesture. There was no further disturbance in his class.

One day a second year student of my wing in the hostel disappeared. I was the monitor of this wing, and so naturally it was my worry to find about the whereabouts of this boy. But nobody knew anything about him. I informed the warden, who was also equally anxious. After two days the boy came back to his room and behaved normally. I was intrigued, and it occurred to my mind to try to endeavour to pry into his sudden disappearance and reappearance. He confided to me, that somehow or other, he was very greatly disturbed and wanted to commit suicide. In a state of dope, he wandered from place to place and then went on to the Jamuna bridge to jump into the swelling river below and end it all. He stood for a few minutes, mustering courage to jump, but it failed him and he decided to come back to the hostel and continue his studies. From this incident I seem to think that suicide is committed in a state of very high emotion, and temporarily reason seems to quit the victim, and the crime is perpetrated without any further thought. But if there is delay, the reason gets better of the emotion and the act is prevented.

In another case, a student of botany of the M.A. previous class disappeared from the college and from the boarding house. For four days he was nowhere to be found. On the fifth day

he attended his classes. I knew this student very well, and so took him into confidence to tell me about his disappearance. He narrated to me that he was fed up with the world and wanted to seek solace and peace in the company of the Sadhus at Mathura and Brindavan. First he went to Mathura and stayed with a renowned Fakir for one night, but discovered that they were all smoking Ganja, talking rot and had no spiritual message to give. He then went to Brindavan for two days, but he could get no consolation in the company of the so-called Sannyasies who have renounced the world. He then came back to follow his studies, as no other alternative came to his rescue. I am glad to record that he did well in life and retired as the topmost officer in the education department in the Government of U.P.

When I was doing my M.A. in English, I had decided that I will not lead an ordinary humdrum life, but will adopt a life of service to the society and the country. The inspiration had come to me through one Andrews Dube, who was a member of the Servants of India Society, founded by Gopal Krishna Gokhale to gather a band of young men who would dedicate their lives to the service of the Motherland. Shri Dube was known to my father also very well and he visited us several times at Mainpuri. He also came to me whenever he was at Agra for his work. He was a bachelor and a very active and useful member of the Society. His life of negation and service had impressed me very much and I decided to follow in his footsteps. To marry, to earn and rear a family, appeared to me too selfish and dry a life to be followed with the common run of men. I argued in my mind from the side of my parents also. It ran like this. We are five brothers, and if one of the brothers gives his life to the country, the parents will still have four sons who will fall in the rut of life, and so my parents can easily afford to send one of their sons in the profession of the service of the country and the society. With these arguments in my mind, I wrote to Pandit Hridaya Nath Kunzru, who was at that time the President of the Servants of India Society, expressing my sincere and strong wish to join the Society and do something for the country to which I have the honour to belong. At that time, in 1932, the society

was paying Rs. 50 as honorarium to its members with no other facilities. In those cheap days this amount was quite sufficient to keep one going, and I desired nothing more. The reply from Pandit Kunzru flabbergasted me completely, and changed the whole course of my life. He wrote to me that he was very happy at my sentiments and desire, but the society was short of funds, and it needed young men who could support themselves, but carry out the behests of the society. My mind began to reel. Here is our vast country which cannot pay Rs. 50 to a young Indian with a spirit of sacrifice in the service of the Motherland, who desires nothing, but mere subsistence to keep the body and soul together. This incident completely metamorphosed my thinking, and I decided to plunge in the struggle of existence, earn well, and then only to give any thought to a life of service.

But whether to marry or not to marry continued to engage my mind for some time. With my ideas of service, and a sense of detachment, I could not decide whether I should get more and more entangled in this material world, from which we want to escape or get less and less agglutinated. Andrews Dube also solved this question. He was sitting in my hostel room one evening, when I discussed this marriage problem with him. He was a bachelor, but I got a shock of my life when he told me, "You know that I am a bachelor, but do you think that I am celibate?" This answer decided my marriage question, and I kept quiet when my elder brother enquired from me about it. Before this I was adamant and was refusing with an emphatic 'no'. It now appears to me that there is no other course for man in this world except to follow the four great Ashramas prescribed by our ancestors i.e., Brahmacharya, Grahastha, Vanaspratha and Sannayas. It strikes me here, that much of the jealousy for the throne, so much visible in the Muslim rulers, who killed or incarcerated their fathers, was a sequence of not willingly relinquishing the throne, and retiring in favour of their sons, who were growing old and getting frustrated. Hindu instructions or prescription to leave the throne at the age of 50 in favour of the heirs is a very practical solution and a sign of the wisdom of the Rishis.

* I passed my M.A. in English Literature in the year 1933 in

the second division. That year nobody could get a first class in English in the whole Agra University, and as such it was not a bad going for one who had done his B.Sc. in Mathematics, Physics and Chemistry and then turned over to Literature.

As usual, after the result was out I started looking for a job. Those were the days of world depression which had started a few years earlier. Tuesday, October 29, 1929, will go down in history as the day of greatest losses in all financial transactions. In five hours, America plunged from financial boom to rock bottom, because it was the Day when Wall Street crashed. Two million shares were sold in less than five hours. Women fainted, a businessman dropped dead watching the ticker tape, the body of another heavy loser was pulled out from the Hudson river. As usual in time of distress, men and women collected together in churches to pray. The depression which started in 1929 continued till 1939 when the second world war started. India was no better. Qualified engineers from Banaras Hindu University could not get a job for Rs. 50 per month. Graduates were prepared to become constables for which they were considered over qualified and so were rejected. Of course, all consumer goods were extremely cheap. I have seen recently Government figures who have worked out the comparative values of a rupee in 1938 and 1972. One hundred rupees of 1938 are equal to 1000 rupees of 1972. Our own early life looks like a page from history.

I was extraordinarily lucky as Agra college needed a temporary lecturer in English, and Principal Fielden was good enough to give the appointment to me. It was for all purposes, a windfall. As soon as the College opened in early July of 1933, I joined the college staff as lecturer. B.Sc. classes were given to me to teach general English, and I am glad to record that I started very well. In fact, both the Principal and Chandrapuri Goswami, congratulated me and remarked that I had begun as if I had previous experience of teaching. But the euphoria was short-lived. Principal Fielden left on a few month's leave to England, and Krall, who was officiating as Principal declared the post of this additional lecturer as terminated. I am not aware of the exact reason, but I later heard that the post was provisional on the condition that the total strength of students

in the college should exceed 1200, which it unfortunately did not.

I have seen in my life that many events when they happen appear to be a curse, but many times they prove to be boons later on. The same happened with me in this instance. As the post was terminated I had to look for another opening. Brother Chaturbhuj Narain was already Assistant Manager at the Harinagar Sugar Factory in Champaran, North Bihar. As soon as I came back to Mainpuri after leaving the college service, he wrote to my father to send me to Champaran as an apprentice Sugar Chemist, for which he thought that the prospects were bright. Father asked me and I readily agreed.

5

AS CHIEF SUGAR TECHNOLOGIST

On return from my round the world trip, I was elevated to the position of the Chief Sugar Technologist of Harinagar Sugar Mills Ltd. It was a very responsible and onerous job. I worked hard and sincerely, and I was able to better the working records of the Dutch Sugar Technologists who had worked previous to me, and who were my Gurus. I cannot help remembering the name of Dr. Kampf, the Austrian Technologist, who was not only a clever chemist, but also one of the finest Europeans I have ever met. He imparted to me his experience without any reservations, and helped me to acquire all the qualifications required for a successful Technologist. His name will always remain green in my memory with respect.

The Head Office of the Sugar Mills was at Bombay, where the Managing Agents called me almost every year after the end of the crushing season for future planning and discussion. In 1944 in the month of April, I was in Bombay living near the head office in the Kalbadevi street. April 14, witnessed India's greatest fire, when the city of Bombay was nearly threatened by total destruction by a disastrous explosion in its docks. The dock area remained ablaze for three days. It threw the Bombay fire services out of gear for nine months, and left a bitter trail of several hundred dead, and several thousands injured. It all happened because of a cigarette butt left carelessly in the hold of a ship carrying explosives.

The vessel exploded with a bang at about 4 p.m. Pieces of seering metal flung into the air, and destroyed everything that came in its way. Buildings shook to the foundations. People were bodily carried away by the blast and thrown many yards

away like stones from a catapult. A gold bar hit the residence of an old man two miles away. Hundreds lay dead, the skins burnt and peeled off. It is estimated that 336 persons were killed and 1,780 injured. Property worth 30 crores was destroyed. The Bombay fire brigade lost 66 gallant men, and another 80 were injured.

I was sitting in my office at 207, Kalbadevi Road on the fourth floor. The first explosion shook the whole building, and the office staff all guessed that Japanese had started bombing Bombay after having bombed Calcutta some time back, when there was extreme panic and all the rich classes had evacuated the biggest city of India. We all took courage for a few minutes and scanned the skies for any bombers, but could locate nothing. Soon another explosion occurred, which was much more terrific than the first. We all lost our nerves, as we saw that the wooden partitions of the office all crashed down, and the whole office staff, including myself, hurried down the stairs, and as no transport was available, commenced running towards our places of residence to know the condition of our families. I was living in the Raja Bahadur Mansion on the Belassis road, near the Bombay Central Railway Station, and ran all the way like others. On reaching the building, I was greatly relieved to find that my wife and child were safe, although panicky. The concussion was so intense that the doors were flung open, after bending the one inch thick all-drop. It is no wonder that soldiers become deaf during bombing, because the concussion created in the air strikes the ear drum and splits it. Flames were visible miles away leaping towards the sky and rendering it all crimson. But it was all miles away, and there was no immediate danger to our building. Still we and the neighbours kept a vigil the whole night lest the flames travel and engulf our building also. In fact, it was not possible to extinguish the fire, which kept on burning for months. The strategy followed was to segregate the burning areas so that the rest of the city may be saved.

Two remarkable incidents are worth mentioning. There was a Hanuman temple just by the side of the place of the explosion. All the buildings surrounding the temple were burnt to ashes, but the Temple remained unscarred, and stood there

like a guarding deity. It attracted the attention of the Bom-bayites, and soon an endless stream of visitors was seen trekking to this holy temple. After a few days I and my wife also went to see it as a piece of miracle, and I can confirm that this particular temple had providentially escaped all damage. Such happenings inculcate a sense of faith in some super power reigning the destinies of mankind, and protecting them from impending danger.

Another remarkable feature was the unburnt and safe condition of the currency notes and other valuable papers deposited in Godrej fire-proof safes. The safes lay in flames for days together, but when removed and opened, the papers inside were safe. This gave a very convenient handle to Godrej Company to establish the efficacy of their fire-proof safes, and I am sure they did brisk business after the great fire of Bombay.

One Limaye was the Chief Engineer with me at the Hari-nagar Sugar Factory. He was an old man, and had never worked in a sugar factory. He was chosen by the Managing Agents as he was known to them as a reliable person, but he was unable to come up to the mark and the breakdowns in the factory were much more than warranted. He had worked in textile factories, and when baffled, he used to tell me that a sugar factory was difficult to handle, because any small breakdown anywhere, stopped cane crushing causing heavy loss, while in the textile mills, if any portion of the factory stops, production continues in the other departments. And this is a fact because of the continuous nature of the process of sugar manufacture, making a link from the feeding of sugarcane in the cane carrier to the sugar in the bag. If a link in a chain snaps, the chain goes out of commission, and so it is with a sugar factory. But due to his reliability and sincerity, he continued in service till the year 1948, when a Dutchman Roemer was appointed. He was a well experienced engineer from Java, overhauled the factory well, and ran it with the minimum of breakdowns. In any industry the chief engineer comes first as he is responsible for proper and efficient running of the plant. The technologist comes next, and can give his best from the existing machinery, if it runs well. The inter-relation between the engineer and the chemist is rather tricky in a sugar

factory, because it is not an engineering industry, but a processing industry, and so the plant should run according to the directions of the technologist who is to deliver the goods, i.e. to crush the highest amount of cane per day, and produce the best possible quality of sugar with the highest recovery of sugar per cent cane. The quality of sugar, the percentage of recovery, cane crushed and the length of the season, determine the profitability of a sugar factory. Many times the disputes which arise between the engineer and the chemist, are based on misunderstanding amongst themselves, and sometimes not able to understand the problem correctly, and apportioning blames to shift their responsibility. I have always been able to win the whole-hearted co-operation of the engineer and that is one of the big factors of my success wherever I worked.

Sometimes non-cooperation between engineering and manufacturing staff is the outcome of the dissensions intentionally created amongst them by the management, which wrongly think that their co-operation will keep the management in the dark. I can assert with all the force at my command that that is a very mistaken policy and puts the factory to undeserved losses, which could be saved. Thus sometimes the management works against its own interest and harms the interest which they wish to sub-serve.

Roemer told me that in Java they were trained to give the maximum facilities to the chemist, who is the processor, and to make improvements and alterations in the plant as desired by him. He said to me one day, "Mr Agarwal, if you ask me to make a hole somewhere today, I will make it, and if you ask me to close it the next day, I will close it." It cannot be gainsaid that all the alterations carried out will not be successful, but honest trials have to be made if any improvement is to be brought about anywhere. Thomas Edison, the famous inventor, was successful in only 50 per cent of his experiments, and he became the greatest inventor of all time, then what about you and me?

When Roemer joined, he came all alone. Everybody thought that his wife will come later, but many months passed and nobody came. One day I was sitting with him rather leisurely

and having a light conversation, when it occurred to me to ask about his wife. I did ask him, at which he became very grave. He kept silent for a few minutes and then said in sombre tones, "I was in love with a girl in Java, and asked my mother's permission to marry her. My mother cautioned me, but I was mad, I did not listen to her. In the end the marriage was solemnised. After some time I found that she was extremely ill-tempered, so much so, that I was afraid to come home and kept lingering in the club or with some friend till late in the night. The estrangement increased till we separated, and she married another man whom also she made unhappy." I asked Roemer why he did not marry again? At which he replied very gravely, "I had no courage to marry a second time". He also requested me not to raise the question of marriage and divorce again, as it was a very embarrassing predicament for him. I took special care not to moot that question again, and also warned other officers from doing so.

Wobad was a German mechanic who was running a Hanomag tractor in the Tarai area on hire. He caught the eye of R. P. Nevatia of Hindusthan Sugar Mills Golagokarannath in the Sitapur district of U.P. When Raja Balkrishnalal of Harinagar Sugar Mills was looking for a tractor mechanic to maintain and run 27 tractors owned by the sugar mills, Wobad was engaged and he proved to be a very good mechanic, and ran the tractors very efficiently for many years. I have found that Germans are extremely hard working, and that is one of the main reasons for their all-round success. One day Wobad was in good mood and he told me that India was a nice country for German mechanics, who came to be called engineers in this country, and drew salaries which they could not dream of in Germany. This once again throws light on our poor engineering, particularly because our young engineers are fond of watching and supervising and not working with their own hands. One can never acquire any dexterity in any engineering skill without dirtying one's hands and doing the things himself. This is very much lacking in India, and our young men have to learn the importance of manual work without which their performance will always remain much below the desired level.

At the same time Reerink, a Dutchman was in charge of the Harinagar farms. The total area of the farms was about 5,000 acres, divided into 10 units. The total area under cane was about 2000-2500 acres per year. Reerink came to India after the set-back in the Java Sugar Industry, as a result of the protective duty imposed by the Government of India on all foreign sugar to establish its own industry. He was a sugar chemist in Java, but failed to deliver the goods in India, and so turned over to agriculture, and joined the Harinagar Sugarcane Farms. He was living at the Gonra farm about 3 miles from the sugar factory. His wife had died, and he had two grown-up daughters who were also living at the farm with their father. Reerink could not look after the education of his daughters properly and both the European girls were an example of lack of culture and decorum. They had nothing to do at the farm, and so they were loafing about with young boys of the neighbourhood. Reerink was hard working and was able to cope with the malarious climate of the Gonra farm by taking plaso-quinine and atebrin tablets every week. He was drinking raw tap water only about 25 ft. deep, but was able to withstand it.

Sugarcane cultivation in Java was all done by manual labour, as cheap Malaysian labour was available there like India, and so there was no necessity to mechanise sugarcane cultivation there. Java was the "India" of the Dutch and was being exploited by them even more than what the Englishmen did to India. There were no tractors in Java, and the most successful method of cane planting was the trench system, in which deep trenches were dug up and dressed with hand spades. Sugarcane setts were planted at the bottom of the trenches, and were slowly filled up with earth as the new cane plant grew up. Earthing was also practised, so that the cane plant was securely anchored in the soil, and did not topple down with rain and squall. Sugarcane fields were treated like a garden in Java and every stool of cane got individual attention of the cultivator. Top dressing of ammonium sulphate was applied to every stool by making a hole near its roots and the required dose of the manure was given with a spoon. The dry leaves were stripped off from every stick of cane, so

that it may get free play of air and sun, and so grow into a healthy cane, and also assisted in the process of photo-synthesis to form sugar in the leaves, and then transport it to the cane stem. Reerink started experiments on this method of trench planting as practised in Java, but as far as I remember, he could not make much headway, as conditions of soil and climate and labour vary in every country, and a successful method in one country cannot be applied with the rule of the thumb elsewhere, without making certain intelligent modifications to suit the country of adoption. He left after two years and then I lost track of him.

One Holster also joined the Harinagar Sugar Mills about this time as Factory and Farm Production Superintendent and Advisor. He was also a Dutchman, and was primarily an engineer, but being at responsible posts in Java had picked up manufacturing and agriculture also. He was a capable man, but his ability could not be properly utilised, and he left Harinagar after only a few months and as I understood, he went to Columbia in South America to work in the sugar industry in that country.

I made it a point to attend the annual Sugar Technologists Convention held at the Imperial Institute of Sugar Technology, Kanpur, every year in the month of October, just before the commencement of the next crushing season. I carried out practical research and wrote original and useful papers for the convention and also for the International Sugar Journals. One of the papers on "The Mechanical Wear and Tear of Floc in the limed and sulphured juice" won international recognition, as it highlighted the wearing and tearing action of the centrifugal pumps on the floc already formed in the juice, by the action of lime and sulphur, which are the two main clarificants in a sulphitation sugar factory.

As already mentioned elsewhere, my study of English and the art of speaking was of immense benefit to me throughout my career as a sugar technologist. The audience sees the speaker, and if he is able to impress with his ability and method of delivery, he is at once known to so many people making the gathering. It is a great pity that the technical subjects branch off after passing the intermediate examination, when

the English language is cut off, and the knowledge of English of the highly qualified technologist is only of the intermediate standard, which is not good enough for free and unfettered expression of ideas. This is one of the big drawbacks why very capable technical persons are unable to rise to heights which they really deserve.

Raja Balkrishnalal, eldest son of Raja Narayanlal, came to Harinagar for the first time, if I do not forget, in 1942, at a very young age. He was very intelligent and hard-working, and I have always been impressed with his general knowledge and the knowledge of the Sugar Industry of India and the world. I, personally, always received excellent treatment and assistance from him which is still continuing. I was invited by him to visit Harinagar in January 1973, after a lapse of 22 years, and it was a great pleasure to see the factory and the people where I started my sugar career. After such a long time the faces had undergone tremendous change, but their names were still fresh in my memory, and it was a new experience to see so many familiar faces, completely transformed, all at once.

6

INTERNATIONAL SUGAR CONFERENCE

Due to disturbed conditions of peace in the world, no International Sugar Conference was held for 12 years after 1938. In the year 1950 Australia hosted the International Sugar Technologists' Conference in Brisbane in the first fortnight of September.

I was at this time Chief Technologist at the Harinagar Sugar Mills in Champaran, Bihar, and it was decided by the managing agents that I should go to Australia to attend this conference. Raja Balkrishnalal Pittie also decided to participate in the conference. Taking advantage of this opportunity, my wife and Mrs Pittie also wanted to go with us. It was agreed to take them along with us and so I managed for a combined passport from Bombay. My previous passport in 1938, when I went round the world, was issued from Motihari in Bihar.

The final decision to go was taken rather at the nick of time and so we had to fly to Calcutta to catch the B.O.A.C. plane in time. We all put up at the Grand Hotel for the night, and drove next day to catch the plane from the Dum Dum airport. The plane was a Constellation, pressurised and air conditioned, and in those days the last word in air travel. It cost Rs. 50 lacs, and the cruising speed was 250 miles per hour. It is a pity that soon afterwards, after the invention of the Jet planes, with a cruising speed of 600 miles per hour, the Constellations went out of vogue, and are now being utilised for transportation of goods.

The first stop-over* was Singapore, where we were accommodated at the Raffel's hotel, where I saw traveller's palm for the first time. Its shape gave an impression of a dancing

peacock. It is called traveller's palm, because it has some pockets in which rain water gets stored up, and some thirsty traveller may find it a boon to recover water from this plant as an emergency drink. I also saw a new fruit, something like a Lichi, known in Singapore as Rambutan. It can also be likened to a miniature jackfruit (*Kathal*). I did not see this fruit again anywhere else.

We went round the city hurriedly in the evening. It looked like a Chinese city as Chinese were visible everywhere, and in fact form the majority of the population. Singapore being a free port is a haven for smugglers, and all kinds of goods and consumer materials are smuggled from here on a large scale. It appears to me that as long as there is appreciable price differences, smuggling cannot be banished from the world. Early next morning we left Singapore and headed towards Australia.

Darwin, North of Australia was the next halt. Here we had some light refreshments, and flew again to Sydney. Like the practice in Europe and America, in Australia also, porters are not available, and the passengers have to lift and carry their own luggage. I looked at Mr. Pittie to see what he does with his luggage. He looked at me, and said, "Agarwal, what are you waiting for, carry your own things yourself," and before I could take any action, he lifted and started carrying his suitcase. I did the same and we went on doing the same during our three month's visit to Australia, which is the world's biggest island.

Australia looks small on the map because it is an island, but its area is more than double that of India, being 29,71,081 sq. miles against 12,59,765 sq. miles of India. Australia was discovered by captain James Cook in 1770 and landed at Botany Bay on the eastern side and took possession of New South Wales. British colonisation began in 1788, and also the settling of British convicts in Port Jackson. In 1901 the six colonies, New South Wales, Victoria, Queensland, South Australia, Western Australia, and Tasmania, federated as sovereign states of the commonwealth of Australia.

Australia is nearly all white. After the year 1901, no immigrants from Asia have been allowed to settle in Australia. We

saw a few Indian families, who had settled there before 1901, and so had become Australian citizens. During conversation with us the Australians informed us that they had erected this barrier against the immigration of 'Chinese. It was a symbol of courtesy to us who had gone there to participate in the International Sugar Conference.

Here and there we saw some aborigines. On enquiring about them we were told that they were a dying race, and were fast disappearing from the scene. To me it appears that wherever the white people went to colonise for their benefit, they endeavoured to exterminate the aboriginal tribes, in order to have unrestricted mastery over the land. In Hawaii very few Hawaiians were to be seen. The same was the case in the Samoan Islands, and even in the United States of America, how many red Indians are visible? I saw a few giving demonstration of antique dances etc. here and there for the benefit of the tourists and for themselves. Perhaps Maories of New Zealand were strong people and multiplied fast, so that they are still an important race in that country.

Australia is a big country and like India has different climates at the same time. While north was hot, the south was cold. Further because it is in the southern hemisphere the climate at any given time is opposite to India. We had therefore, to carry both the summer and the winter clothes. I made a mistake to carry one big suitcase to accommodate all the requirement of clothes, as it was very inconvenient to carry such a big suitcase all by self. The load was all on one side and the bending posture which had to be assumed to lift and carry it, was a trial. It would have been much better to carry two small, say, 24" suitcases to contain all the clothes, as carrying two evenly balanced suitcases, could have been much more convenient.

We reached Sydney some time in the evening, and after consigning our luggage to a hotel, we went round for a little sight-seeing. At about 8.30 p.m. we thought of eating something. Wherever we went we found that all the hotels and restaurants had closed down, and we could not get anything to eat. We came to know, much to our chagrin, that all restaurants close down at 8 p.m. due to establishment laws.

The shops all put down the shutters at 6. p.m. During the rest of our stay in Australia, we had to be watchful to finish our dinner by 8. p.m.

As Brisbane was the venue of the Sugar Conference, we flew into that city the next morning. Next to me was sitting one gentleman, well dressed, and looking like an executive anywhere, but on enquiry he told me that he was a centrifugal operator in a sugar factory and was flying to meet his fiancé in Brisbane, and would return the next day to attend his duty. I got a shock and pointed out the gentleman to Raja Pittie, who was also very surprised to have a glimpse of the standard of life in Australia. How many people can afford to travel by air in India, much less an ordinary worker of a sugar factory. In India, out of a population of 55 crores, only 3 million persons are income tax payers, which works out to approximately 0.5 per cent. I later learnt that the percentage of air travel on the basis of population, was the highest in Australia, even more than the richest country of the world, the United States of America.

After my visit to Australia, I am convinced that a large population and prosperity, can never go together. A few examples will illustrate the point. We met a few Indian students in Melbourne, and on asking them we were informed that they came rather from a poor class and could not afford to go for higher studies either to England or America. So they chose Australia, where the population in 1950 was only 8 million, equal to the city of Calcutta, with more than twice the area of India. There was great shortage of labour in all kinds of jobs, and they were always in demand to do the odd jobs. They made money during the two weekend holidays and also during the other holidays and vacations, so much so, that they were able to follow their studies without any help from their parents in India. They had enough money to live well according to the standard prevailing in that country.

In another instance, we were invited for tea by one of the Directors of a co-operative sugar factory, who was living on his farm a few miles from the city. He took us round to see the cane cultivation. During the trip I saw that the cane field from which sugarcane had been harvested, still had many

canes which were left and not cut down. I told my host, "Well, why have you left so many canes from harvesting? I am sure you can get a ton more per acre if you harvest all the canes still standing in the field". He went on to explain that there was great shortage of labour, and so they were at the mercy of harvesting people. Yesterday, he fired the harvester doing his harvesting, but later in the evening, in a sombre mood, reflected that if that particular harvestor did not come to cut his cane where would he find another man? So early in the morning he took his car and went to the cottage of the harvestor to request him to come on work. When he reached the cottage of the harvestor, he found that there were already four cars standing there coaxing him to harvest their sugarcane. That is another extreme, but a middle way to balance the labour force and the work available is called for for a happy balance of society.

There is no doubt that India has made tremendous progress in all directions since the dawn of Independence, but the rising population at the rate of a crore per year, erases the improvements made and neutralises the result of much thoughtful planning and achievement. Efforts in family planning are hardly noticeable, although much money and honest endeavour is being spent. Out of the 100 million couples in the reproductive age, only 7 per cent are using some contraceptives living in the cities, while the rest 93 per cent are going on merrily rendering the industry of child production the most prosperous industry of our country. I am convinced, beyond any shadow of doubt, that family planning should get top-most priority, if "Garibi Hatao" programme is to make any headway, failing which it will remain a pious wish and a mirage beyond the realm of possibility.

While the death rate in India has decreased from 36.3 in 1931 to 14.0 per thousand in 1971, the birth rate has decreased only from 46.4 to 39. Prime Minister Indira Gandhi has rightly said, "To plan when population growth is unchecked is like building a house when the ground is constantly flooded". It is in one way heartening to put on record that the average life expectancy in India which was 22 years in 1925 and was 31 in 1947, is now 52 years, mainly due to the phenomenal decrease

in the death rate of infants, and also due to better medical facilities, particularly the control of epidemics.

The Sugar Conference.

The actual programme of the Sugar Conference started with the tour of the sugar districts of Australia, to familiarise the delegates from nearly all the sugar producing countries of the world, with the methods of growing sugarcane, milling and manufacture of sugar, and the special features of the sugar industry, as every country has its special features. The sugar industry in Australia can be divided broadly into three divisions, North, Middle and the South. The three divisions have different climate and soil conditions and so, the cane varieties grown, and the sugar recovery obtained vary quite considerably. The maximum number of sugar factories are concentrated in Queensland, where the conditions of soil and climate were very much similar to the conditions in North Bihar, where the Harinagar Sugar Mill is situated.

The work on sugarcane breeding was carried on quite vigorously at the Mackay breeding station, where they were raising 20,000 seedlings per year, and were very proud of it. They got a shock when I told them that we are raising 200,000 new seedlings every year at our Coimbatore breeding station. It is really a matter of satisfaction and pride for India that almost every country of the world, which has sugar industry and grows sugarcane, has strains of Indian canes in them. The hardy quality of Indian canes is unsurpassed because we have been able to cross sugarcane with Saccharum Spontanum which has imparted its hardy characteristics to sugarcane. I remember that one Panje was deputed by the Coimbatore breeding station to go to Nepal and find out any new strains of Saccharum Spontanum in that country to further improve our cane varieties. Panje stayed with us at the Harinagar Sugar Mills guest house for a few days and told me very interesting adventures in locating the wild Saccharum for breeding purposes. The name of Sir Venkataraman was a household word in Australia also as in Louisiana, and this boosted up our standing in the sugar world.

Australia produces raw sugar first with the standard defeca-

tion process, using lime only as a clarifying agent, and then refines it in its own central refineries. This double process is followed in all the white countries, because the sugar as produced in India called Plantation White, on the lines of Java, is not good enough or pure enough for the fastidious white man. The dieticians the world over, have proved that refined sugar is not as good as Gur as food, still the refinement in food production and cooking continues unabated, depleting its food value, and rendering it devoid of the vital vitamins. There are four methods of cooking the food, steaming, boiling, roasting and frying. Steaming is the best and frying the worst, because it destroys much of the food value and also renders it hard to digest. The fat accumulates in the arteries in the form of Cholesterol, thereby diminishing their diameter and consequently causing hypertension, the much dreaded disease of the so-called civilisation of the present times.

Dr. P. Honig, the Chairman of the International Conference, was considered to be top-most Sugar Technologist in the whole world. He was a Dutchman, and had been the Director of the Pasroan Research Station in Java. This research station for the sugar industry of Java had a very high international reputation, and in fact, was the only station doing research on the manufacture of plantation white sugar directly from cane, by the sulphitation or the carbonation methods of cane juice clarification. When the Japanese attacked Indonesia in the year 1942-43, Dr. Honig was one of the earliest scientists to be evacuated by the Dutch as highest priority was given for the safe evacuation of the scientific personnel, who were considered more valuable to a country than the military personnel. Dr. Honig told us that although he was evacuated, his wife could not be allotted the same priority, and the description of the indignities heaped on her by the Japanese beggars description. When she joined her husband in New York, after the cessation of hostilities, she was so emaciated and changed that Dr. Honig could not recognise her. These are the tragedies that happen in the wake of war, but it is a great pity that the top leaders of any country are willing to throw their countrymen in the conflagration of war on the least pretext, and on extremely flimsy and insignificant grounds.

The first world war was fought to end war, but another war had to be fought only after a lapse of 20 years. No wars can be prevented by disarmament of armaments, but by the disarmament of the hearts, and as long as there is avarice and jealousy in the human hearts, wars will, recur.

After having an extensive and intensive tour of the sugar areas of Australia, the delegates were whisked to Brisbane to attend the regular conference, which lasted three days. Papers on different problems of the sugar industry in the various countries of the world were read and discussed, thus opening the window on the Sugar world in its multifarious aspects. The Indian delegation was given its due respect, and I am very happy to note that the vegetarians were showered special attention, although Australians were quite at sea to provide them with a menu unknown to them and it was hard for them to appreciate how Indians could survive on a strictly vegetarian diet. No rice was available, and the little that was available was reserved for pregnant and nursing mothers. Even vegetable cutlet was not known there, and our ladies sometimes went into the kitchen and taught the cooks how to prepare the cutlets. My wife and Mrs Pittie were in the kitchen at Bundaberg, when they noticed that a kettle, containing some meat and a fowl was boiling on the stove. On enquiry they were informed that that was the scurvy for the vegetarian soup for them. They were both so scared that during the rest of the days they were in Australia, they both did not touch the vegetable soup which previously, they were taking with much relish.

We were very fortunate to meet and know closely some of the celebrities of the sugar world. Mention must be made of Dr L. D. Bauer, Director of the Hawaiian Sugar Planters' Association Research Station in Honolulu, Hawaii, Mr King, Director of the Australian Sugar Station, Dr Kerr, Director of the Mackay Sugar Research Station, and Dr Hess, Director of the Pasroan Sugar Research Station, East Java. They were all very fine people, who knew their subjects thoroughly well, and were capable of explaining the intricate scientific problems, both concerning sugarcane agriculture and sugar manufacture, in a lucid and forthright manner to be understandable to the

delegates who were on the lower rung of the ladder, as far as sugar technology was concerned. I could observe that Dr. Honig was so high above the others, that whenever he spoke, it appeared that a Professor was teaching his class of students and not equal partners in an international conference.

Cane Payment

India is the only country in the sugar world where payment of sugarcane is made on the basis of weight, regardless of the quality of cane. This is mainly due to the fact that the cane grower and the miller are different people. In most of the countries manufacturing sugar, the mills are also the growers of cane, so that the conflict of payment does not exist. The weight of cane and the quality of cane, as regards its sugar content are conflicting characteristics. Generally speaking, high yielding canes have low sugar content, although the sugar per acre may be more in the case of high yielding varieties, which is a deciding factor when the miller is also the grower. But when the farmer knows that he would be paid on weight basis, naturally he is interested to grow a cane variety which gives him the highest tonnage and he is not interested in its sugar content. These two militating factors are mainly responsible for the low sugar recovery in India. The payment of cane on the basis of quality could not be made practicable in our country, as the number of cultivators involved, supplying cane to a sugar factory in India is staggering. The number of farmers supplying cane to 36 and odd sugar factories in Australia is of the order of 8,000, while at the Shahganj Sugar Factory, in the district of Jaunpur where I was General Manager, the number of cultivators, including gate and outstation cane, was 56,000.

In Australia, the sugarcane supplied by every cultivator, was separately fed to the cane carrier, and the juice extracted from that cane was sampled and analysed for its sugar content, and payment was made on the basis of sugar recovery theoretically obtained from that cane. This provided a great fillip to the cultivators to grow high sugared canes, which payed them better, and also improved the economy of the factory manufacturing sugar from this better and richer cane. During the

period when Gundu Rao was the Director of the National Sugar Institute, Kanpur, India, serious efforts were made to switch over to the system of cane payment on the basis of quality, but after a few years of honest and hard work, the scheme was abandoned as impractical. Every country has its own peculiar problems, and in India large farms or areas of land cannot be allowed to be taken over by the factories for the cultivation of sugarcane, and thus concentrate the profit of cane-growing also in the hands of the factory-owners. But at the same time, I do believe that the factories should have demonstration and seed farms to provide improved seed and also propagate the promising varieties of sugarcane, released by the sugarcane breeding stations, for further multiplication and distribution.

In Australia most of the farmers had about 20 acres of land, on which they grew sugarcane by tractors, owned, driven, maintained, and overhauled by themselves. I have found that engineering sense is highly developed in white countries. Children, particularly boys, are given mechanical toys from early childhood, so that they grow in a kind of scientific atmosphere, and so later in life are able to handle many engineering jobs, for which we require specialised assistance. Under the circumstances, no wonder the farmers were able to run the tractors extremely well, without any major breakdowns, or upsetting the cultivation programme. At the Harinagar cane farms we experienced that the untrained drivers drove and drove, till the tractor stopped itself, which meant a major breakdown.

Shortage of labour forced the Australians to invent different kinds of harvesting machines, prototypes of which were shown to us. These machines were much smaller than the ones I saw in Hawaii, which were giant machines compared to the small ones here. The harvester was an important man in Australia, as without him no cane could be cut and transported to the factory for crushing. Australia had made it compulsory by law that the new immigrants from Europe, had to work as harvesters of sugarcane for perhaps, three years before he could be given any other job. I found that most of the harvesters came from South Italy, which gave me some

notion of poverty in that country. A film *Bicycle Thief* which I saw in India a few years back, was also concerned with South Italy, demonstrating once more the poor financial conditions there. But although, the harvesting work was considered low, the daily earnings were good enough to afford them quite a good standard of life, and their earnings during a 5 month crushing season, lasted them the whole year, because the harvesters were not inclined to do any other work the rest of the year. I noticed that most of the harvesting labour came by their cars or jeeps on work. The cane fields were all burnt before harvesting as in Hawaii. This practice is followed, wherever there is shortage of labour, and they are not willing to strip each and every cane stick as is the practice in India. India crushes the cleanest cane in the world, due to plentiful and cheap labour. Although the German tractor Engineer Wobad calculated and told me that Indian labour was the dearest labour in the whole world, if the individual output is taken in consideration. This may be an exaggeration, but is partly true, because the tendency to get wages without doing any work, is on the increase in our country, and I have been a witness to it in my long sugar career from 1933 to 1970. I have been a helpless spectator of how the efficiency and output of labour has decreased with increasing wages and stability of service. Even the removal of the tops from the harvested cane was very unsatisfactory. The harvested canes were laid on the ground, and the tops chopped with a knife irrespective of the length of the cane sticks so that some canes were under topped and the others over topped which meant either the delivery of cane leaves for crushing or the loss of valuable sugar contained in the upper portion of the cane which was cut off and thrown away. The burnt cane also imparted its carbon to the bodies, hands and faces of the harvesters, so that in the evening after the harvest, they looked like black demons. The carbon particles carried with the cane were mixed with the extracted juice, and imparted a recalcitrant character to the juices inhibiting good clarification, bad sedimentation, and causing difficulties in efficient filtration. But anyway, the whole process was much better than the grab harvesting in Hawaii, which carried earth

and stones, and other rubbish with the harvested cane, and presented its own problems in the crushing and clarification processes.

The milling tandem in the Australian sugar factories is entirely different from any other country of the world producing sugar from cane. They are following a system of hot maceration baths, where the cane after being milled in the initial mills of the tandem, is dragged and drenched in hot boiling juice before being fed to the succeeding mills. This is done to soak² the crushed cane completely with the dilute juice to induce the cane cells to part away with the last traces of juice contained and held by them tenaciously. As the soaked cane will not feed, every mill has a pusher feeder to force the cane in the mouth of the mills for further extraction. The distance between each mill is of the order of 45-50 ft. as against 12-15 ft. in India and Hawaii. Each mill has to be driven by a separate mill engine due to the distance involved, which incidentally also affords individual regulation of the speed of the mills according to the requirement of crushing. Apart from the milling tandem, the rest of the factories were not very much different than other countries. The milling extraction achieved was of the order of 96-97 per cent which is very high compared to the Indian figures, but as raw sugar production entails less consumption of steam, the steam balance could be maintained.

In Australia they had a 40 hour week, working only 5 days in a week, Saturday and Sunday being full holidays. I found that drinking bars were filled up even on Friday afternoons, where noisy scenes were witnessed even from the roadside.

Professor Otto Schmeideberg is of the opinion that "alcohol is a depressant, a narcotic, a protoplasmic poison, that reduces the efficiency of every tissue of the body that it comes into contact with." Alcohol has the property of preserving the dead and killing the living. Lloyd George, said "This drink is the prolific cause of pauperism." Henry Ford opined, "I cannot consent that my government shall be a partner in a business whose best customers are our worst citizens." The money spent in America on alcohol, 13.6 billion dollars plus the financial loss resulting from accidents, is large enough to pro-

vide every American family with \$ 1000/- per annum.

Marshall Pitain said that "our soldiers drank and could not fight, and the alcohol was the main cause of the collapse of the French armies." Drink loosens the inner brakes, and leads to irresponsible behaviour. Liquor does not remove depression, it only creates a temporary amnesia (forgetfulness).

We were invited by one of the cattle farmers for breakfast. There are huge cattle farms known as ranching farms after the American parlance. During the conversation, I asked the farmer how big was his farm. He replied that its area was 25,000 acres. "Are you surprised?" was his natural reaction. "Of course" was my reply, and at which he informed me that his neighbour had 1,25,000 acres. It was a revelation that the cattle farms could be so unbelievably large, because in India a few hundred acres form a big farm. This also gave us an indication of the size of Australia and its meagre population.

The size of the Sheep Farms was no less a wonder. Australia produces 80 per cent of the world's wool, and naturally, we were interested to see some sheep farms also. The pure white sheep were so full of wool, that we could see neither their legs nor face. They appeared to us just like big bundles of moving white wool, and it was a sight to watch thousands and thousands of these sheep moving about in the green meadows, presenting a beautiful contrast of white and green. The biggest sheep farm that we saw had an area of 400,000 acres, a staggering figure.

Australia was the Andamans of the British, the hard criminals and convicts being banished from England to Australia. In fact, the Australians themselves freely admitted that they were the descendants of convicts, at which I was rather surprised, as it was against the common human behaviour. It is seen in life that nobody wants to confess his weak points, and tries his best to cover them.

In another case, a farmer was living by the side of a river, flowing between his house and the main road. His children had to go to school on cycles which had to be ferried across the river. In order to save this daily ferrying the cycles were left on the roadside under a tree, where they lay the whole night, and sometimes even for days together, when there were

holidays. I was almost on the point of enquiring whether the cycles may not be stolen in this manner, but good sense prevailed, and I kept my mouth shut, lest the farmer may consider that I belonged to a nation of thieves.

One day in the evening, we all went out for a drive in a taxi, and returned at about 9 p.m. On alighting from the taxi we went to our respective rooms. Soon after there was a knock at my door, opening which I found Mrs Pittie standing in a disturbed mood. She told me that she had forgotten her purse in the taxi containing her costly diamond bangles, and wanted to know whether I had taken down the number of the taxi. Of course I had done nothing of the kind, but had a kind of conviction that the taxi driver would come back to return the forgotten purse. She remained agitated as she was the affected party and went back to her room to sleep, but I am sure she kept awake unable to sleep over the loss. As I lay in bed, about half an hour afterwards, there was a knock again at my door. I opened the door quickly, and to my great relief found the taxi-driver standing with the purse in his hand. He handed it over to me saying that he found it in his taxi after parking at home. I thanked him very much, took the purse, knocked at the door of Mrs Pittie who immediately opened the door, and was all in cheers to get the purse and the diamond bangles back without any effort. I did not try to reward the taxi driver, as I knew from former experience that he would have taken the offering of any reward as an insult. I was also told later that in such cases, the general practice is to return the purse or any other container without opening it lest the findee develop a temptation after seeing the valuable contents. So these are the descendants of the convicts.

The examples of honesty narrated above do not mean that there was no crime in Australia. I have found that small thefts and small crimes are almost nonexistent in such countries, but big crimes like murders, bold dacoities, robberies, and the like were quite common. Look at the rail dacoities and the big postal robberies even in the heart of London. Kidnapping and the demand of big sums of money as ransom are still prevalent in the civilised America.

Every Saturday evening, huge crowds of the countryside people and their children would jam the roads and cinema houses in the adjoining towns. Saturday was the day for the exhibition of films for the children, who came in great numbers to the cities to enjoy them. It was also seen that Saturdays and Sundays were really enjoyed as days of rest by the public at large. Nobody except the infirm would be found at home on these weekend days. Horse racing and cricket were the most popular games for the young and the Bowling Green for the elderly people. I had not seen this game of Bowling Green anywhere else in the world, and watched it rather closely. It is played on a grass lawn, beautifully made and maintained like a billiard table, and balls as big as cricket balls or even bigger ones are rolled on the lawn to strike one another, something on the pattern of the billiards. It is a light game, but requires great skill and practice to play it well and acquire proficiency in the same.

The horse racing reminds me of the annual horse race held in Sydney. We were far in the north of Australia, when Mr. Pittie asked me to book accommodation at some good hotel in Sydney to be able to watch the famous horse race to be held a month hence. I contacted several hotels on the phone, but from every hotel I got the same reply, "Sorry, no accommodation available". Being disappointed and unable to understand the reason for such great rush, I remonstrated to one hotel manager, "I am asking for a place a month in advance and you say there is no accommodation". His reply was classic. He told me, "Gentleman, you are trying to book rooms only one month in advance and are disappointed. The practice here is to see the race, and while leaving to book a room for the race next year". This is madness, I thought, but then there is enthusiasm and intense interest in something which must be fulfilled.

After having failed to get any place in Sydney, I tried to get accommodation at some other place nearest to Sydney, and it will be interesting to record that we got two rooms in Mornington, 30 miles away from the race course, but as Mr Pittie was very enthusiastic about the race, we did see it. The stakes were high and it appeared that the whole of Australia

was concentrated on the race course on that eventful day of the annual race.

The Australian people were also very hospitable and we got quite a few invitations to go to their houses for tea, lunch or dinner. Somehow they came to know that we were fond of chillies. The Lillies who invited all the four of us had the mother of the hostess living with them. She was an old and very amiable lady who wanted to give us the best lunch, vegetarian of course, which they could manage. The old lady went to the back of her house and found wild chillies growing there. She managed to pick up a few and added them quietly to the vegetable curry being prepared by her daughter, Mrs Lilly. We hired a taxi and drove 45 miles to have the lunch. The Lillies served it with much fondness. The lunch was simple consisting of rice, vegetable curry and mashed potatoes. As we had no such lunch of curry and rice during the previous two months we had been in Australia, we had a good helping, mixed the curry with rice and started eating it with much relish. As soon as the first morsel touched our tongues, we felt a great burning sensation and it took some time to comprehend what it could be. Still to be polite, we kept on nibbling at and praising the preparation. But tears soon started rolling down our eyes and the noses started running, because the curry was unbearably hot. Poor Lillies watched all this, and although we were hearty in approbation, they could see that there was something wrong. The old lady had kept quiet so far, but felt guilty and admitted that she was responsible for the debacle, as she had stealthily mixed the wild chillies with the curry with the best of intentions. We appreciated the thoughtfulness of Lillies a few days later, when we were invited for dinner by another gentleman. As soon as we reached his place, he said that you need not be afraid here with the curry, as the Lillies had already written to them to be careful with the chillies.

One Professor Vinod of Poona had also accompanied the Indian delegation. He was with Apte of the Phalton Sugar Works in Maharashtra. He had a hobby of palmistry and I could see that he was very much in demand with the lady delegates of the sugar delegation from many sugar-producing

countries of the world. Whenever there was some spare time Professor Vinod could be seen surrounded by ladies, stretching their hands. He was able to tell the past rather correctly, and so the crowd escalated as the days passed. One day the Professor was having some light chat with a few Australians, when the Professor mentioned that he was almost run over by a car while crossing the road in the morning. One of the Australians remarked, "Very Nice". I had found that saying "very nice" was a mode of courtesy, and this phrase was very often used by them in season and out of season. Professor Vinod was rather irritated, and blurted out in a little ruffled tone, "why do you say very nice?" The Australian coolly replied, "I said very nice because you are saved".

Our wives met a number of Australian ladies who had not married and now had become old. I had asked my wife to enquire from these old maidens how they felt without marriage throughout their lives. My wife reported to me that all the old maidens were sorry that they missed to marry. The young age passed off not so badly, but in the old age they did realise their folly when it was too late. They had nobody to fall back upon, and they felt so lonely and unhappy in old age. This once again reminded me of the wisdom of our *Rishis* for the prescription of the four Ashramas, which have to be followed by everybody in life, and that there was no other alternative.

It appears therefore, that marriage is a sacred trust. Woman is the power, the Shakti, and without her man cannot reach the fullness of life. Man and woman both together make a whole.

My life partner Prem Lata was selected for me by my elder brother Hridaya Narayan who was given full responsibility and authority to find a bride for me. I had not even seen my bride prior to marriage. I may be denounced as outdated, but I still feel that finding a life partner by the parents or elders is by far the best and the surest way to seek out the marriages already made in Heaven. In this way the union through marriage is the beginning of love. In the other method of wooing and courting, it is generally what Shakes-

peare described as "most friendship is feigning and most love mere folly", and in many cases marriage is the end of love.

My wife comes from a very respected family of Patiala. She is the daughter of Late Rai Bahadur Chirnajilal, Finance Minister of the State, and a man of great confidence of Maharaja Bhupinder Singh of Patiala. She has been a source of strength and comfort throughout, and has shared with me the vicissitudes of life with equanimity and poise. Without her I could not have reached the fullness of life which has given me both peace and happiness, as much as is available in this mundane world.

In this connection I remember a tale from the old Hindu mythology. God created man first in the beginning of creation. Man was alone and lonely and approached God to give him a companion. As all the solid elements were exhausted in the creation of man, the sun, moon, the stars and the hills, God took the roundness of the moon, the curves of the creepers, the clinging of the tendrils, the trembling of grass, the slenderness of the reed, the velvet of the flowers, the lightness of the leaf, the quick glance of the fawn, the brightness of the sun's rays, the tears of the mist, the inconstancy of wind, the timidity of the hare, the vanity of the peacock, the softness of the down, the hardness of diamonds, the sweetness of honey, the cruelty of the tiger, the warmth of fire, the chill of snow, the chatter of the jay, and the cooing of the dove. All these He combined to make Woman and gave her to Man. And Man's days were filled with happiness, for now he had someone with him to share the pleasures of the world.

In course of time, man came to God saying "Lord the creature that you have given me makes my life miserable. She chatters all the time and teases me beyond endurance, never leaving me alone. She requires constant attention, and cries about nothing, so I have come to give her back to you. I cannot live with her". So God took her back. But eight days later Man was at God's door again. "Lord my life is lonely since Woman has gone. I remember how she danced with me, laughed and filled my heart with pleasure. I remember how she clung to me, and how sweet and comforting was

her presence, when the sun went down and darkness surrounded me".

So God returned Woman, and told Man, "Go your way, and do the best you can. You cannot live with her, and you cannot live without her".

Suicides

When I went to see the Sydney Harbour bridge, I saw that the steel pillars and other sections of the bridge were all covered with barbed wire. I had seen this bridge previously in 1938, when I had gone round the world, and touched Sydney on my way to the Hawaiian Islands. Then there was no barbed wires or anything else of the kind. Naturally, I enquired about the purpose of the barbed wires, as wrapping barbed wires could not increase the strength of the bridge. I was shocked to know that the bridge was being lately used for committing suicides. The desperadoes climbed the top of the bridge and jumped into the sea below to be lost forever. The barbed wire was put up to prevent the climbing.

With this I was reminded of two other places. My uncle Professor Badri Narain was living on a hill in the King George park in Gwalior. As I was a student of Agra College, I went to him off and on to spend a few holidays from Agra. There was a small zoo in the park, and in one enclosure, surrounded by a water ditch there were two lions. An enclosure of iron poles and cross-sections ran around the ditch. The iron spikes were turned inside to prevent the lions from jumping out of the enclosure. On another visit to Gwalior a few months afterwards, I found that the iron spikes were turned outwards. Here also, on enquiry I was informed, that the spikes were turned outwards to prevent those who wanted to commit suicide from climbing the iron enclosure and jump inside to be eaten up by the lions.

Another instance was at Delhi at the Kutub Minar, where nobody is now allowed to go to the top of the minar, because some persons, went to the top, and committed suicide by jumping on the ground below. The recent suicide by Dr. Vinod Shah of the Council of Agricultural Research, sent a

wave of interest in science in our country. This suicide was premeditated and was committed with a purpose.

There are almost 1,000 suicides in the world per day. In America a suicide is reported every 20 minutes. In India 40,000 suicides were reported in 1968. Bombay has the highest rate of suicides in the country.

An attempted suicide is a "cry for help", and it is suggested by some social workers that section 309 of I.P.C. which makes an attempt to commit suicide punishable with a year's simple imprisonment or fine or both, should be removed. Instead of help and sympathy, the man gets abuse and chains.

Sydney zoo is something the like of which I have not seen anywhere else in the world. It is situated on a hill at different elevations, by the side of the sea under very scenic and naturally pretty surroundings. The collection of animals and birds is also extremely extensive. I will never forget the Bird of Paradise which I saw there. The foliage was bright, shining, soft and silky, something unbelievable and heavenly, and after having a look at it, the feeling dawned automatically that the bird could be from nowhere except from paradise.

The kangaroo and the emu and the koala are also exclusive to Australia. The kangaroo with its two big hind legs, and two small front legs, a heavy balancing tail and a pouch for the young offspring is something unique. The kangaroo is a vegetarian, and they are docile also, so much so, that they would come by the side of the railway, asking for food. It was tragic that the American soldiers shot quite a few of them, but later on admonition from the Australian government stopped doing it. The emu is a huge bird something akin to an ostrich, but like its younger brother. It cannot fly, but runs and gallops. The koala bear is something like a small bear, but very different. It does not drink any water throughout its life, but lives on succulent leaves which provide him all the moisture needed. The female koala has also a pouch for the young ones like the kangaroo, and so it appears that this pouch system has been specialised by Australia. The koala is also vegetarian and harmless. Incidentally there is no wild animal or snake in the whole of Australia, and so one can

go about anywhere in the grass or jungles without any fear on that account.

At this time of the year there was a casino or carnival going on by the side of the zoo at the sea shore. The multi-coloured lights and neon tubes were visible from a distance, and after seeing the zoo, we decided to spend some leisure time in the casino. There was an elevated train structure, running up and down at great speed. Raja Pittie proposed to have a joy ride. I was initially afraid to try the experience, but the Raja insisted and I had to agree. My wife and myself took seats side by side opposite to Pitties. When it started going up and down with terrific speed, my heart nearly sank, and somehow I was able to keep the grip of the railing counting every second for the train to stop. My wife was worse, and it is still a wonder to me how she came through the ordeal. I still remember the terrible experience and shudder at it.

After the end of the International Sugar Conference which lasted 15 days in all, we elected to stay on to study the Australian sugar industry in greater detail, and also to see the country. We revisited the whole of eastern coast from the north to the south, and gained valuable experience of the sugar industry and also about the people and the country.

Karwa Chauth is a festival observed by the married women of India for the health and happiness of their husbands. In the Hindu religion the husband is to his wife as God is to his devotees, and I can say from personal experience that one cannot get the like of a Hindu girl in the whole wide universe. Her tradition and culture is beyond words, and the spirit of devotion and sacrifice for her husband is unknown in other parts of the world. At the time of this Karwa Chauth, we were staying at the Lyons hotel in Brisbane. On this day the married ladies observe Nirjala fast (fast without water), and take water and food only after worshipping the moon which in India rises at about 8.30 p.m. My wife and Mrs Pittie naturally observed this day as a day of fast and prayer. As already mentioned all the hotels and restaurants close down in Australia at 8 p.m., so we asked the waiter girls to arrange our dinner in a tray and keep in our rooms. They were desirous to know the reason, and on knowing that it was a holy

day for the ladies, they also felt interested and said that they would also like to see the worshipping of the moon, and then serve us hot meals. The hotel manager also felt interested and expressed his desire to watch our festival. All of us went to the top roof of the hotel just after 8 p.m., and waited for the rise of the moon. Minutes passed and then hours, but still there was no trace of the moon. Sometimes we saw some strong light and thought that it was the moon, but on closer observation there was no moon. The manager and the girls waited till 10 p.m. and then left. Mrs Pittie left at 11 p.m. Myself and my wife continued to wait for the blessed moon till 12 midnight, but still there was no trace of it and it eluded us. Nobody took any food that night, because the ladies, due to the force of tradition and also some superstition were afraid to eat anything without worshipping the moon. In the morning I started thinking hard as to how the moon did not rise at all. It struck me that we were in the southern hemisphere, and not only this, the time difference between the Indian and the Australian time was nearly 6 hours. How could we then see the moon at the Indian time? It is very funny that wherever a man goes, he projects the conditions of the place he is accustomed to live. In the same way when a man of north India goes to south India during winter, he fortifies himself with woolen clothes, little thinking that it would be warm there. It happened with us during the year 1927, when father took us all to witness the International Theosophical Conference at Adyar, Madras, and all of us packed up the winter clothings for the end of December. We were all perspiring in Madras, and had to perforce purchase some ready-made summer clothes to get over the heat and inconvenience. So whenever the Karwa Chauth festival comes, since that day in Australia, we always remember it with fun, and enjoy narrating our experience to others who all enjoy it.

Mr and Mrs Pittie, being Marwaris were very fond of Papads, and carried some with them even to Australia. They got the papad roasted over the fire, whereby it expands and becomes crisp to eat as the last thing at the end of a meal. Mrs Pittie gave two pieces of this papad to a serving girl, and explained to her how it was to be roasted on an electric heater.

To roast a papad properly requires a certain amount of experience, so that it may be properly done, neither more or less. The poor girl could not do it correctly, and it caught fire. After some time the girl returned with a little ash on the plate showing it to us and saying "Sir, it caught fire, and only this is left". We all laughed which nonplussed her, as she could not appreciate what was this all about.

This reminds me of an incident in Sourabaya, Java, where we stayed for a few days in the Orange hotel. One day while taking lunch, we noticed that some guests were eating papads like the ones we eat in India. As the papads carried by Mrs Pittie from India were exhausted, the Pitties grew restless on seeing these papads. Mr Pittie called the waiter and ordered out four for all of us. The papads were soon served. They were not roasted but fried, and appeared as if they were prepared from rice and pulses combined. We ate them with great gusto, and enquired from the waiter what they were made of. When he told us that they were made from fish, we were startled, but it was too late.

The Saries put on by our wives were much admired and appreciated by the Australians, both men and women. Old men and women came to us to beg permission whether they could touch the Saries and feel the glamorous cloth. The Indian sari is admired the world over, and it is very hard for the foreigners to comprehend that the sari is a piece of cloth and is not stitched at all. Europe is visited by quite a few Indians and their wives, but Australia is visited by very few, and so our ladies provided quite a novelty, and they were stared at wherever they went.

One day we were shopping in a departmental store. An old Australian came hurriedly to me, and said, "Gentleman blood blood" I got upset and asked rather nervously, "Where?" He replied back, "On your wife's forehead". My wife was a few feet away from me. I quickly went to her and looked at her forehead, but I did not find any trace of blood. The anxious gentleman also came along and pointed towards the vermilion mark on my wife's forehead, which is an usual decoration for the married women in India. He came again after a few minutes and politely said, "Gentleman, one

more question". He continued "how is it that one lady has a round one and the other a long one?" I explained to him that the vermillion mark is to be there, but the shape depended upon the choice of the ladies. He was satisfied, thanked me and walked away.

Vegetarians have quite a tough time to select and eat strictly vegetarian preparations outside the shores of India. There are different interpretations of vegetarianism the world over. Some people think that eggs, fish and chicken are all vegetarian dishes. When they are told that we eat none of these, they were perplexed and wondered how the vegetarians could live. It is all a question of habit and of usage. As we were visiting sugar factories, which were primarily situated in small places, being an agro-based industry, the restaurant management did not object to our ladies going in their kitchens and making Indian preparations. In fact the Indian curry and rice and the Parathas prepared by our wives were much appreciated by the other delegates, to whom these preparations were absolutely new. I remember particularly Dr Baver, Director of the Hawaiian Sugar Planters Research Station, who was so pleased and excited after eating our Indian preparations, that he gave us a tap dance, much to the amusement of all present. As already recorded elsewhere the vegetarian soup had a foundation of meat extract, which we did not know before. but when our ladies saw it being prepared for them before their own eyes, they never touched the soup again.

I was told in India that macaroni was prepared from fine flour, and so was strictly vegetarian. When I saw macaroni on the menu at one hotel, I was rather pleased and ordered it out immediately. There was nice macaroni on the top of the plate and I started eating it with much fondness. After the top layer of macaroni was finished I noticed something brownish at the bottom. I uncovered it and enquired from the waiter as to what it was. He coolly replied, "Calf's liver". I quickly told him that I wanted macaroni and why he had brought the liver? He said that the full dish was macaroni on calf's liver, and so he brought the whole dish. If I did not like the liver I could leave it and eat only the macaroni. It is impossible for them to appreciate that touching of our

eatables with something we do not eat, upsets us and we are unable to eat selectively, by eating what we like and leaving what we do not like.

I was confronted with a very strange question about vegetarianism in America. When they came to know that I was a strict vegetarian, but was taking milk and milk products, one American put a straight question to me, "What kind of vegetarian are you when you are taking milk, because milk was an animal product." This has never occurred to me, because milk is considered holy and the best vegetarian food available and much relished in India. I was unable to give him any convincing answer, because I had never thought about it.

The population of Australia is concentrated on the east coast, and when agriculture advanced swarms of rabbits came from the west and nibbled away the young shoots, and destroyed the whole crop. It was an insoluble problem because the speed of multiplication of rabbits was phenomenal. A big conference of agriculturists and scientists was organised to meet the challenge of this gigantic problem, and the solution that emerged was that a barrier wall 5 ft. high should be erected all the way from the north to the south to prevent the rabbits from crossing over to the east. The decision involved huge cost, but had to be undertaken to protect the whole range of agriculture without which the Australian economy was bound to be completely shattered.

In pursuance of the resolution, the work on the construction of the baffle wall commenced in right earnest and on a grandiose scale in keeping with the requirement. When more than half the wall was constructed in great haste, somebody noticed small tunnels running under the wall at many places. On closer scrutiny it was revealed that the rabbits when prevented from crossing over the wall, burrowed underneath the wall and kept passing on from the west to the east with as much ease as before. The erection of the wall was done away with, and the money spent had to be written off. The body of scientists and agriculturists came for sarcastic criticism at the hands of the public whose valuable tax money was thus squandered, although with the best of intentions and in good

faith. Later large scale baiting and direct killing had to be taken recourse to.

I had read in geography about the coral reefs off the eastern coast of Australia in my school days, but could not get any physical idea as to what it was like. For 1,250 miles the coral wall of the Great Barrier Reef, guards the eastern coast of Australia from the giant breakers of the Pacific. This vast framework of limestone is made from the skeletons of an infinity of Polyps, laid down over million of years. Lying 20 to 150 miles off shore, the reef covers 80,000 sq. miles, and is by far the largest structure ever built by living creatures. One of the wonders of the world, this mighty coral kingdom owes its existence to trillions of insignificant creatures, hardly bigger than a pinhead. Seen through the clear water so clear that it does not seem to exist, it is a rainbow coloured under-water garden with the richness of an oriental rug, and is an unbelievable feast to the eyes. There are small and big fish of many varieties as seen through the glass bottom of the boat in which we were carried. It was a memorable trip.

Jenolen Caves situated nearly 80 miles from Sydney, where we went by taxi, are also something which I did not see anywhere else. Nothing much was visible from outside, but when we went inside with the guide, we could not believe our eyes. It was a novel and bizarre sight. The structures are known as Stalactites and Stalagmites. Stalactites are icicle like formation of crystalline calcium carbonate formed by dripping of water through overlying limestone. Stalagmites are also deposits of calcium carbonate or other material on floors of caverns resembling stalactites and similarly formed. The formations take thousands of years to form. At some places water loaded with calcium carbonate was dripping and continuing to take shape, and at other places the water dripping had stopped, and the formations had ceased. Any tourist visiting Australia should not miss to see the great coral reef and the Jenolen Caves, because nothing like it is to be seen anywhere else in the wide world.

Melbourne is a city which was planned on the drawing board. It has all straight geometrical roads, and is a sight to see when flying low over the city in a plane. The only city in India,

something on the lines of Melbourne is Pondicherry which has also straight roads. It was a French possession, and now forms part of India. Chandigarh was also built from a scratch in a mangoe grove, where there was not even a single structure, but it is not built on the principle of Geometrically straight roads, but is entirely different. Carbuiser, the French architect, no doubt has done a mighty job in planning and construction of Chandigarh.

From Melbourne we flew to Hobart in Tasmania, south of Australia. It was very cold there even in September, and the most remarkable thing about Hobart was its apple gardens and flowers of various hues. The apples were in full bloom, and clusters of red apples on the green trees were a feast to the eyes. I was informed that most of the apples imported into India from Australia, came from this place.

We wanted to pay a visit to New Zealand also, but being sugar men, we preferred to visit Java rather than New Zealand, as time at our disposal was not enough to visit both the countries. The Sugar Season starts in India in November, and we were anxious to be back in our country in good time to catch the season. So we missed New Zealand and headed for Java by plane from Sydney.

We were very happy to have spent three months in Australia, 15 days with the sugar delegates, and for two and a half months by ourselves, studying the sugar industry and the Australian people and their country. In the valedictory session, before the close of the Sugar Conference, I spoke for my country about the wonderful arrangements made for the comfort of the delegates, particularly for the vegetarian Indians. While enumerating the reasons for the sweetness of the Australian canes I casually remarked that the sweetness of canes was no less due to the sweetness of the Australian people.

7

IN JAVA

On our way back from Australia to India, we flew to Jogjakarta in Java by Quantas Air line, which was working in collaboration with the British Overseas Airways Corporation (B.O.A.C.) When we were hovering over the city in order to touch down, we saw naked children playing by the side of the roads, and my wife remarked, "Look, we are back in Asia". For three months in Australia, we had seen nothing of the kind, the standard of living there being only next to the United States of America. In small towns, with a population of 5,000 people, the departmental stores were as large as the big stores in Bombay and Calcutta.

We did not stay in Jogjakarta for any length of time, but enplaned and arrived at Sourabaya, the centre of the Indonesian Sugar Industry. The famous Research station of Pasroan was also nearby. Indonesia was rather disturbed still after the war, and most of the Dutch had left the country after the Japanese occupation. But some bold Dutch were still to be found here and there. It is extremely difficult to leave a country all at once, where the entire lives have been spent, and all the possessions and the means of livelihood are there. We had been informed that Orange hotel was the best hotel in Sourabaya, so after leaving the plane, we came out of the airport and hired a taxi to go to the Orange hotel. The taxi driver did not understand our language because in Java they spoke either Malayese or the Dutch language, and we knew neither. Anyway he could follow that we wanted to go to the Orange hotel, and so he took us there. It was not so far and from Indian standards, we calculated that it should cost about Rs. 5/-.

As we did not understand the language of the taxi driver, we decided to go to the reception counter of the Orange hotel and ask the receptionist about the charges from the airport. The receptionist was a hefty Dutch, and he said 5 Ropeahs. The taxi-walla who was following us heard this, and muttered something in an angry mood. We were astonished to witness the change in the complexion of the 6-footer Dutch, and he quickly requested us to pay Rs. 10/- to the taxi driver which we did. We learnt later that the Dutchmen who were still in Indonesia were living in great fright of the Javanese population, as they were extremely hostile to the Dutch who had ruled and exploited the local people for generations. In this context, I should appreciate the English people for their wisdom and judgment, because they chose to leave India when they saw that it was best to do so in their own interest without creating any hatred in the mind of Indians. Even after their rule for over 250 years they left with good grace and the mutual feelings of respect and amity are still to be seen in the relationship between India and England. On the contrary, the Dutch endeavoured to hold too long which sent the mutual relationship between them and Indonesians into shambles, and as a consequence precipitated much violence and abhorrence.

We were informed that Java was still not very safe for tourists, and so we were careful to move about, and decided to visit only the safe places as advised by the hotel manager. The Orange hotel was still in the possession of the Dutch and was looked upon as the best hotel for the stay of foreign tourists. Dr. Hess who was the Director of the Pasroan Sugar Research Station and whom we had met in Australia had recommended this hotel to us as a safe place to stay in Sourabaya. The hotel attendants including the room and the dining hall waiters, did not understand English and so it was both annoying and enjoyable to try to explain to them our requirements by signs like the deaf and dumb persons. To show one thumb is a sign of approbation and to show both the thumbs was a sign of extra pleasure, and whenever the boy understood us and carried out our instruction, we showed him both the thumbs, at which he was mightily pleased.

Luckily we met a Gujarati gentleman from Bombay, who was a businessman there and was prospering, as he had a good house to live in and a car to drive about. He was living only with his wife while his children were in Gujarat. On enquiry why he chose to start his business in Java and not in India, he said that the standard of honesty in India was so poor that he could not succeed there, and had to migrate to Java where he was doing very well. In this context I am reminded of the conversation I had with a friend of mine in Bombay many years back, when he also told me the same thing. He was more forthright and told me that the whole business in India was based on deception, falsehood and dishonesty. Those who cannot do all that failed and came to grief. This is a very sad state of affairs, and is a blatant exposition of our moral character and poor standard of honesty.

We were very sorry to see some good and big sugar factories completely destroyed by Japanese bombing a few years back. At one factory we saw the milling house of a factory pulled to the ground with some gears and fly-wheels standing here and there. The Dutch ran a very prosperous Sugar Industry in Java for many years, and all the crystal sugar was imported in India from Java till the protective duty levied on imported sugar in the year 1932. The Java sugar industry suffered a great set-back after this protective duty came into operation, and due to this loss of market in India, the Dutch were hostile to the development of sugar industry in India. The Dutch technical personnel, which came to India to man our sugar factories, were only second rate, as the first rate went to Holland, or otherwise were retained by the remaining sugar factories in Java. The second raters had to come to India for their livelihood, and were to a certain extent considered disloyal to their country to teach the know-how of an industry to India which was now a competing country as far as sugar was concerned. We had no means to judge the ability of the Dutch engineers and technologists who opted for India from Java, because we had no previous experience of sugar-making. In the years 1932 to 1935 or so, nobody in India had any knowledge of the efficiencies either of the mill house or of the boiling house. In those days the making of sugar

from the cane in the carrier to the sugar in the bag was akin to a piece of magic on the part of the technologist, and the profits were so high in the beginning, that the question of efficiency of working did not arise. Most of the factories got back their invested capital in two or three years, and the unsuccessful ones in 4 to 5 years.

Dr. Hess, Director of the Pasroan Sugar Research Station, was already back from the International Sugar Conference in Australia, and he had kindly invited us to visit the Javanese Research Station. This we were ourselves very desirous to visit, as it was known the world over for its high degree of research both in agriculture and manufacture of plantation white sugar direct from sugarcane juice, without the intermediate manufacture of raw sugar as per the practice of most of the white countries. Although it was off-season in Java, the research station was humming with activity, and it was a great pleasure to witness the high calibre of research and dedication of the scientists. The research station had the distinction of having its former director in the person of Dr P. Honig.

The research on agriculture is allotted top priority in the sugar industry, as the whole economy of sugar manufacture depends upon the percentage of sugar recovery from the cane crushed. A compromise is to be achieved between the sweet canes and the yield per acre, so that cane cultivation should pay the farmer and also the factory. In some countries like Hawaii, the criterion is the yield of sugar per acre, as the availability of land is limited, and maximum sugar has to be recovered from the same land. The conflict of interests between the miller and the producer of cane has already been dealt with elsewhere, as the system of cane payment is on weight basis in India, irrespective of the quality. Nobody really knows what are the factors determining the sweetness of sugarcane, but efforts are constantly being made to grow and breed sugarcane of higher and higher sugar content, so as to increase the sugar recovery. Dr. Hess told us that he was primarily an agriculturist and his main work for years was to find out the factors responsible for imparting sweetness to canes. And he said that he had found the factors. We were all very happy as the sugar recoveries in India were and are still low in the

subtropical belt in North India. I very anxiously requested him to tell us the factors, so that we may apply them to our country also and thus boost up the economy of sugar production. He smiled for a while and then coolly replied, "I found that I found nothing". He continued that during years of research and experimentation, sometimes certain factors and conditions would give encouraging results, and in other years the results of the previous experiments would be completely reversed. I have found that agricultural research is an extremely slow and laborious process, because it depends upon soil and climatic conditions, which vary yearwise and seasonwise. To be able to duplicate the conditions of research year after year is impossible. Practical examples can be seen from the Nagpur oranges which do not grow the same size and sweetness anywhere else in the country or from the Dashchri and Alfanso mangoes which have their fixed locations and places, and they cannot be grown the same at any other place. Mangoes bear fruit on alternate years, and it has not been feasible to make them yield fruit every year, whatever manures and irrigation may be applied. And so it is with cane.

We saw some of the sugar factories around Sourabaya which had escaped damage at the hands of the Japanese. In one factory I saw a vapour line juice heater, which was not in existence anywhere in India, and I am happy to say that the first vapour line juice heater in India was installed by me at the Laxmiwadi factory of the Godavari Sugar Mills in the district of Ahmednagar in Maharashtra. This heater is a device to recover heat from the vapours going on to the condenser, and so is a major step in the economy of steam. It also indirectly increases the capacity of the condenser. Now quite a few factories in India, which are short of exhaust steam, have installed this type of vapour juice heater and improved their heat balance. Another very simple device was the white-washing of the various vessels in the factory with lime for preservation in the off-season. I adopted the practice in India and saved unnecessary expenditure on paints which would come away, anyway, with the juice during the season.

We were disappointed to learn that the Dutch did not train any of the local people for any skilled jobs in the sugar

factories and kept them, as it were, hewers of wood and drawers of water much more than what the English did in India. Every country which rules endeavours to keep the ruled ignorant, so that they may not awake and arise for their rights, but the lessons of history teach us that no people can be kept in eternal subjugation, and the policy of deliberate imposition of illiteracy and ignorance acts as a boomerang sooner or later, and throws away the yoke of subjugation at earliest.

We were very desirous to pay a visit to the Bali islands, where Ram Lila is still performed, and at every step can be seen signs of Hindu culture, but due to not so peaceful conditions, and the difficulty of air booking, we called off the visit, and missed it, I think, forever.

The signs of Hindu culture and Sanskrit language could still be detected here and there. Jogjakarta was said to have been derived from "Jagatrai", which means the good of the world. "Vanita" was being freely used for women. There were some other Sanskrit words quite prevalent which have escaped my memory. The airlines was called the Garuda airline from the word Garud, the Vahan (carrier) of Vishnu in Hindu mythology. One of the planes of the airlines in which we flew from Jogjakarta to Sourabaya was an unconverted bomber in which there were no chair seats, but only a cushioned bench on which we had to sit and fasten the safety belts as if flying on a bombing mission.

From Java we flew to Singapore in a constellation of the Quantas Air line.

The stop-over in Singapore was again at Raffles hotel. All the passengers went round the city in a bus. The scene near the sea was very much the same as at Chaupati in Bombay. There were mobile vendors of fruits and Chat, all uncovered to which we are quite accustomed in India. But I saw that people of other countries were frowning at it, and talking among themselves, "Look all open and infected, the cause of the spread of diseases in the East." A certain amount of infection is bound to take place when flies and dust blow over the open wares but carrying disinfection to another extreme does impart a great sensitiveness to infection, and decreases resistance to such an extent that slight exposure to infection can-

not be fought by the antibodies created in blood as a means of natural immunity. We are all the time swallowing millions of germs through our lungs, but the antibodies are able to fight most of the infections, and so assist in keeping us healthy. A famous Doctor once remarked, "It is not disease but health which is a wonder."

Singapore was dominated by the Chinese population, who owned most of the trade and shops. Being a free port, it was a hotbed for smuggling. I was told that there were regular gangs whose main work was smuggling, and they were not afraid of going to jail. They were very calculative, and the jail term and the accrued earnings were all stipulated. Singapore in those days was far from clean, but now it is considered to be one of the cleanest cities in the world which is due to the yeomen efforts of the present Government. The citizens have now acquired a sense of cleanliness after pressure and training that no longer make the city dirty. If you throw anything on the road in Germany, the policeman will fine you one Mark and give you a receipt. And if you throw away the receipt on the road, he will fine you another Mark. I learnt my lesson in the National Park near New York when an American halted his car, and picked up the empty carton of the photographic film which I had thrown on the road. I was very happy to see the cleanliness in New Delhi when I was there last year with my younger brother Surendra Narain. I used to go for a walk every day early in the morning, and it was a pleasant surprise to me not to find even a single piece of paper on the road or on the footpath. This cannot be achieved without imparting a sense of tidiness in the average citizen. I have already recorded the cleanliness of the cities of Switzerland without any scavengers, because every citizen cleans the front of his house and also the road.

The cane crushing season in North India starts in the middle of November, and so we had to hurry back to catch the season in time. We landed at Calcutta on 20 November 1950. It was here that we had to go through a gruelling customs, not experienced anywhere else. On enquiry, I was informed that it was due to our arriving from Singapore which is a prolific place for smuggling.

8

IN WARDHA AND SEVAGRAM

I am a fatalist in as much as I believe that nothing can happen to a man which he has not deserved. One can only do his best and nothing else. I define fate as that which falls to one's lot after he has done his best. There is no fate without effort, or there is no effortless fate. Even when food is served before you, you have to make some effort to eat it. You have to spread out your hand, make a morsel, bring it to your mouth, and then masticate it.

In the same way I believe that every grain bears the name of its eater. When one's bread is finished at one place, and is ready at another place, circumstances will be created to leave that place and move to the other place. Something of the same sort happened at Harinagar. After putting in 18 years of devoted service with all sincerity, circumstances were created to make a change, and I did it without frayed tempers and acrimonious insinuations of any sort, and without apportioning blame on anybody.

In between my service at the Godavari Sugar Mills, first at their Laxmiwadi factory and later at the Sakarwadi factory, I spent some time with my brother Shriman Narayan, who was living at Wardha at that time. He was the Founder Principal of the Govindram Seksaria College of Commerce, and was residing in a cottage named "Jiwan Kutir" not far from the college. My father and mother were already there for some months. My father, after retirement from legal practice in January 1948, elected to live with his sons, who were all nicely settled in life, and were always very happy to have him with them. He had a wonderful capacity of adaptability, as he

kept on changing with the times and so was able to live gladly with any of his sons who were flung far and wide. My mother was less amenable to change, but she also followed in the footsteps of my father, and lived happily to a ripe old age.

Central provinces looked very dry and devoid of greenery in comparison with the green Uttar Pradesh. I fully remember the day when Madalsa, Shriman's wife and daughter of Seth Jamanalal Bajaj, came to Mainpuri just after her marriage, and was not only delighted, but was ecstatic to witness the innumerable trees and the greenery all around. In the National song of Madhya Pradesh, their Desh is described as a place of "Stones".

Wardha had the historic Guest House of Jamanalal Bajaj where most of the important meetings of the Congress Working Committee were held. In fact the various rooms of the guest house were named after the top leaders like Jawaharlal Nehru, Rajendra Prasad, Sarojini Naidu, Vallabhai Patel and others.

Another well known place a few miles from Wardha was Pavnar where Vinobaji used to stay, and carry on his constructive and religious work. Vinobaji came into limelight one morning when his name was announced by Gandhiji for starting the individual satyagraha. Before this Vinobaji had shunned publicity, devoted all his time to constructive work, and was unknown to the public at large. But after his historic Bhoodan movement, his name flashed across the Indian horizon and he came to be known to the world at large as "the God who distributes land." "Vinoba is not a politician nor a social reformer nor a revolutionary. He is first and last a man of God. Service of man is to him nothing but an effort to unite with God. He endeavours every second to blot himself out, to make himself empty, so that God may fill him up and make him His instrument." These are the words in which Jaiprakash Narayan describes Vinobaji. I had the good luck to attend some prayer meetings of this great saint, and also to see him working in his kitchen garden tending the vegetable plants with hoe in his hand and perspiration on his forehead. Vinobaji is a believer in physical work without which a healthy body and a sound mind is not possible. If somebody were to tell

him that he does mental work, Vinobaji asks him to eat also mentally, and watch the result.

Sewagram, where Gandhiji chose to live was a small village 4 miles from Wardha, joined only by kachcha road which used to get slushy in the rains, but after the Mahatma took his residence there, soon a pucca road was constructed and the small village started humming with activities, both constructive and political. It was also connected by telephone lest the Viceroy of India need to have some emergent talk with Gandhiji regarding the political developments in the country. It also became a place of pilgrimage for the whole world, as whoever came to visit India from abroad, wished to go to Sewagram and have darshan of the great Mahatma. I had the unique privilege to be in Sewagram a few years before the assassination of Gandhiji, and to live in close proximity of his cottage. I had also the opportunity to attend his morning and evening prayers, and also to dine with him sitting close by. His food was simple and meagre, and I used to watch him eating slowly, masticating his food well. His plate nearly always contained a few dates, brown Gur, coarse rice and boiled and salted vegetables grown by the Ashram inmates in the land surrounding the huts. His disciplined life and selected food kept him sound in mind and body and when I saw Gandhiji in October 1947 in the Bhangi colony at Delhi, he was in radiant health, looking even better than a few years ago, and I had no manner of doubt that he would live to an age of 120 years as he used to say. But his life was cut short by the cruel bullet when the world was shocked beyond measure, as the greatest exponent of Ahimsa was killed by *himsa*.

While at Sewagram I also came in close contact with other famous constructive workers, devoted and dedicated to the work allotted to them by Gandhiji like soldiers in an army with the motto "Do or die". They were Shri Krishnadas Jaju, Kishorelal Mushruwala, Aryanayakam, his wife Ashadevi and Radha Krishna Bajaj. It was Gandhiji who fished them out, these jewels of men, and gathered them round him to march the country towards the goal of freedom. It was Gandhiji's good luck that he lived to see the attainment of Swaraj for which he lived and died.

Shri Mangaldas Pakwasa was the Governor of Madhya Pradesh in 1952, and he invited us to spend a few days at the Raj Bhawan in Nagpur. Governor Pakwasa was a symbol of modesty and courtesy, and we were very well looked after at the Raj Bhawan. His daughter-in-law was living with him and managing the household. One day after dinner we were served with mango juice. It was fresh and not tinned, and we wondered how it could be prepared out of season. Purnimabehn later informed us that it was prepared out of the juice of Oranges and Papaya. We tried this mango juice preparation a few times to surprise our guests, and it was always a hit.

Purnimabehn was a very polished and well educated lady, and she narrated to us two incidents from the Ramayana which I still remember. They are as follows: When the great bridge to cross the sea was being constructed by the monkeys, the process followed was that two monkeys Nal and Nil used to touch the big stones, which were then thrown into the sea and they floated. Seeing this Rama also caught hold of one stone and threw it into the sea, but it sank. Hanuman was standing nearby and Rama said to him, "Look the stone that I threw has sunk." Hanuman, the greatest of Bhaktas, meekly replied, "He who has been relinquished by you is bound to sink". In another instance when Sitaji was rescued after defeating the demons in a fierce battle, all the female monkeys gathered together to evaluate the special beauty of Sita for whose freedom such an Herculean effort was made. The anxious monkeys circled round Sita, watched her closely at near quarters and then remarked, "What is the beauty of Sita when she does not even have a tail".

Our stay in Wardha was memorable, but since then I could not get an opportunity to visit Wardha again. One of the major reasons being that Shriman also left Wardha for Delhi, first as a member of the Parliament, then as a member of the Planning Commission, later as Ambassador in Nepal and the last as the Governor of Gujarat. He has just relinquished that post and is once again living at "Jiwan Kutir" Wardha, engaged in constructive activities, mainly educational reform.

9

FAR FROM THE NORTH

After leaving Harinagar Sugar Mills, I joined the Laxmiwadi sugar factory of the Godavari Sugar Mills in Maharashtra in Ahmednagar district. It was an old plant scrapped by the Belapur Sugar Company, and purchased by Seth Somaiya at a cheap price. Brady's erected a complete new sugar factory after rejecting their old plant which had become out-dated and uneconomic. The new plant worked beautifully and paid back its investment in a few years.

Seth Somaiya was a Kachhi gentleman domiciled in Bombay. Previously he had a sugar candy (Misri) factory in Belapur, and he was also selling agent for a number of sugar factories in Maharashtra. The money made in candy and selling agencies was poured into sugar factories. Shri Somaiya had another sugar factory at Sakarwadi at the Kanhegaon railway station. This sugar factory was a first class Skoda plant, all electric driven so much so that there was not a single driving belt in the whole factory. When I told Arnold, the Professor of Sugar Engineering at the Imperial Institute of Sugar Technology, Kanpur, that there was no belt in the Sakarwadi Sugar factory, he smiled and said, "No Mr Agarwal, there is one belt". When I protested that he was wrong, he pointed out to my pant belt, and humorously remarked, "I told you that there is one belt, and it is round your waist".

I had joined the Laxmiwadi factory just about a fortnight before the start of the crushing season. So I had to study the whole plant quickly.⁴ I discussed all the outstanding problems with the old staff and went through all the previous reports carefully to apprise myself of all the difficulties of working

in the years gone by, to fortify myself to confront the problems and to improve upon them. The Chief Engineer C. D. Malhotra was a qualified and fine man. He had graduated from the Banaras Hindu University, and luckily belonged to Patiala, the place from which my wife comes. He co-operated with me whole-heartedly, and carried out expeditiously the alterations and improvements suggested by me. I am glad to record that the factory ran much better than in the previous seasons, and the sugar produced was even better than that produced by the sister Sakarwadi factory which was definitely an improved plant over the ramshackle Laxmiwadi.

Chief Engineer Malhotra had joined the Laxmiwadi sugar factory one year ahead of me. As the plant was very old and rickety, it required lot of spares, and other important store materials to run it well after proper overhauling. So he made out a list of his requirements and submitted it to Shri Somaiya. On estimation the cost of the materials came to something about Rs. 80,000/- . The Seth called Malhotra and told him frankly that he had no more money to invest, and he was interested to have a chief engineer who could run the factory without any investment. If he could do it, so far so good, otherwise he shall have to find another engineer who could do it. With this background, there was not an iota of chance of getting money from the Seth for any major changes, so I contented myself with small but vitally effective changes which yielded results.

K. K. Bhargava, a very senior Sugar Technologist had been working both as Chief Chemist and Manager at this factory for the last few years, but his health failed, most probably due to overwork, and I was appointed as Technologist to take away the extra load from him. I am happy to say that after seeing my work only for one year, the Seth put me in charge of his other factory also, situated at a distance of 7 miles. My programme was then to attend to the Laxmiwadi factory in the morning and then to drive to the Sakarwadi factory in the afternoon. After my supervision, both the factories showed better working as regards the crushing, recovery and quality of sugar, which are the three criteria of good working. It has been my most precious experience that the Seth who

did not give a nail for the factories, invested Rs. 20 lacs in both the factories under my advice and got reasonable return.

The main trouble why the mill-owners are shy to make any investment in their factories is that in many cases the money is spent, but they do not get any return. I know the cases of a few factories who invested money beyond their means, but not only that they did not get any return, but sometimes the factories ran even worse than before the huge investment was made. Some factories changed hands as the finances were completely blasted. My experience in this respect has been that if the mill-owner is convinced that the suggested machinery will give him a profitable return, he will beg, borrow, or steal and make the investment. The capacity of a sugar factory is equal to its smallest unit, in the same way as the strength of a chain is its weakest link. When almost all the units are replaced or increased at tremendous cost, and one unit is missed by inadvertence or inexperience, the total investment goes to waste and breaks the backbone of the mill-owner. During my sugar experience of nearly four decades, I was considered rather conservative, but I built up a reputation that whatever investment I suggested was bound to yield its reasonable return.

The sugarcane cultivation in Maharashtra was quite different from the sub-tropics of the North. The cane varieties grown were all noble canes, bred at Coimbatore, and suited to the tropical and mild climate of the Deccan plateau. All the cane fields were irrigated by canals, and nearly 30 irrigations had to be given per year to grow cane successfully. The sugar content and the yield of cane per acre were also much higher. The average recovery of some of the factories in Maharashtra was higher than 12.5 per cent as against 9.5 per cent of the north. Being more profitable, more and more factories were installed in the Deccan and now Maharashtra's total sugar production is next to Uttar Pradesh, which used to produce 50 per cent of the total Indian production.

A visit to Malinagar, a co-operative factory 55 miles from the nearest railway station was an experience. I went to the factory along with Seth Shantilal, the only son of the senior Somaiya, in a brand' new Austin car newly purchased, but our

elation disappeared when we saw American luxury cars like the Pontiac, De Soto, Chrystler, speeding around when we were approaching the Malinagar Sugar factory. On enquiry I was informed that all these big cars belonged to the Bagaitdars (farmers). I had seen the same scene in Australia where most of the farmers had cars, but not the luxury cars like Malinagar. These Bagaitdars were all shareholders of the sugar factory and supplied cane to it. The yield of sugarcane per acre for Adsali, Sali and ratoon were 100 tons, 70 tons and 50 tons, almost unbelievable figures for the north where an average yield of 15 tons is considered normal. No wonder that the farmers made enormous profits, although the recovery in the factory was 1 per cent lower than other neighbouring factories. This was due to the excessive use of chemical manures which increased the vegetative growth, but depressed the sugar content of cane. The additional profit in the price of cane, more than compensated for the lower profits in the factory, and made them rich. These farmers previously belonged to Poona and were called Malis or gardeners. They, in a group, shifted to the new site of the sugar factory and called the place and the factory Malinagar on the lines of their original profession.

Many factories in Maharashtra were situated far from the railway stations unlike in the north where almost all the factories were built at the railway stations. This was done mainly for the facility of transport of machinery, raw materials and the finished product, i.e. sugar. The main consideration in Deccan has been the availability of abundant supply of sugarcane from places around the factory, so as to ensure fresh supplies. Cane is a very perishable raw material, and starts deteriorating or losing sugar as soon as it is harvested, so that every attempt is made to shorten the time between harvesting and its delivery to the cane carrier for crushing. One of the fundamental causes of the highest recovery of the Kolhapur factory, year after year was the delivery of fresh cane to the factory within 12 hours after harvesting. The other cause was the silting of the cane fields due to flooding of the river closeby the farms. The system of overhead irrigation called the Pokar lines was also unique, and is to be seen

nowhere else in our country. Walchandnagar, the famous sugar factory, is situated far away from the railway station and is connected by their own light railway. Laxmiwadi factory is 8 miles from the railway station Kopergaon, while the well-known co-operative factory at Loni, whose success gave a spurt to the co-operative sugar factories all over the country, is situated nearly 20 miles in the interior. The same is the case of another sugar factory of Walchand Hirachand at Ravalgaon, away from Manmad.

It is remarkable that while U.P. and Bihar have a number of sugar factories following the carbonation process of clarification for the production of better quality of sugar, both as regards grain size and colour, in Bombay Deccan, there is not a single factory following this more intensive clarification process. As the canes are noble, purer and sweeter, the simple and cheaper process of sulphitation, produces as good sugar as the carbonation process in the sub-tropics, where thin hardy canes have to be grown.

The only disadvantage with the noble canes is their low fibre content. While the average fibre content in the north ranges from 15-16 per cent, the fibre in the canes grown in Maharashtra ranges from 11-12 per cent. This low percentage of fibre produces less bagasse to burn and so causes problems of extra fuel consumption, which militates against the economics of sugar production. Due to inefficient working to begin with, in the Deccan factories, huge quantities of extra fuel in the form of wood were burnt, and thus most of the fuel available from the forests nearby, was all consumed. The next alternative was to obtain expensive coal from the distant coal fields in Bihar and Bengal. It was to my advantage that I had made a deep study of the fuel economy and fuel balance in the Indian sugar factories. Due to my personal interest, I was the only Technologist member of the Fuel Economy Committee set up by the Director, Imperial Institute of Sugar Technology, Kanpur, from its very inception, and had thus the advantage of studying all the reports of the factories consuming extra fuel, and surveyed by the Fuel Economy Committee, whose Chief Engineer was Jagjeet Singh, an experienced sugar engineer. During the course of investigations, water

and steam metres were fitted at all the important places in the sugar factories, and very exhaustive studies were made which brought out the weak points for remedial measures. The steam balances at both the factories of the Godavari Sugar mills under my charge were improved with the active co-operation of the mill-owner and the chief engineers and encouraging results were achieved.

The successful working of a sugar factory depends upon the unstinted co-operation between the engineering and the manufacturing departments. It is further to be understood and appreciated that a sugar factory is not an engineering, but a processing industry, and the best results can be achieved only when the processor is given all facilities for his work, so that he can get the best possible results out of a given plant. Many times there is a problem which is clearly understood neither by the engineer nor the technologist, and blames are thrown at the doorsteps of one another. Narrow departmental attitude is suicidal to the factory and the technical personnel. The best way is to sit down with cool heads, understand the problem, thrash it out and then to act on it. It should be inculcated in the mind of the workers that there is only one department which is called the Factory department. With such co-operation I was always able to improve the heat balance of sugar factories, consuming large quantities of extra fuel, and saved them bagasse to sell to the neighbouring cardboard and paper factories, thus bringing extra money from this bye-product. Another bye-product, filter mud from the sulphitation factories, is a valuable manure, and is all transported to the sugarcane fields. It is acid and can also be utilized for the reclamation of alkaline land. This I did in another factory which I joined later after a few years.

In January 1956 the International Sugar Technologists' Conference was held in India. Through my efforts it was arranged that the delegates would first visit the Sakarwadi factory. At that time the Sakarwadi factory was running, as an experiment, the Saha's process of alkaline filtration, and it was run very successfully during the visit of the International delegation. Professor Saha was at that time the Director of the Imperial Institute of Sugar Technology, Kanpur, and it went to

his credit to invent a third process of clarification over the conventional carbonation and the sulphitation processes.

Due to my efforts and the interest shown by Seth Somaiya, the Sakarwadi sugar factory was equipped to run the sulphitation process, the carbonation process, the Saha's process, and raw sugar refining process. I am not aware whether any other sugar factory in the world had such diversified processes, and that also under one roof. All the minute details of the arrangements of the visit of the delegates were worked out and executed by myself and Seth Shantilal Somaiya. When the special train carrying the delegates left the siding of the factory, Seth Somaiya was so elated that he came to me and said, "Thank you very much Mr Agarwal", because the successful visit, so well arranged gave Sakarwadi universal reputation.

Once the sugarcane farms of the Godavari Sugar Mills were so infested with rats that it became a very serious problem. The rats cut away the roots of the cane plants, and fields after fields started drying out.

Rats are a great menace to Indian agriculture. The rate of growth of their population is unbelievable. A pair of rats can multiply upto 350 millions under favourable conditions in three years. Each rat consumes approximately 24 grams of food per day. Their population is more than the human population in India, so the damage to food grains by their consumption and destruction can better be estimated or guestimated. Further the rats are extremely bait shy. It is common experience that if you plant a mouse-trap in your provision stores on the first night one or two foolish rats may be trapped, but later you can keep the mouse trap for months without catching a single rat.

Patel was the farm superintendent of the farms of the Godavadi Sugar Mills. Naturally it was his responsibility to save the cane crop from this intense rat damage. He was himself well experienced, and he consulted the entomologists for fighting this menace. He was advised to resort to direct killing of rats as that was the most effective way. There was a tribe in Maharashtra known as Wadars who were expert in killing rats and also ate them after frying. I was naturally interested and went to see the campaign being carried out practically. The

modus operandi was to dig and to dig following a rat's hole. Rats do not burrow deeper than three feet, but make circuitous burrows to evade detection, and deceive their enemies, but they are closed at the dead end without any escape. The burrows were tracked by the Wadars till they reached the dead end and caught hold of the rat's tail and killed it. At places in the burrow were discovered small heaps of grain and also rags and cotton for their snug beds. The grain storage must have been for the rainy day. Sometimes small creatures behave wiser than man, and provide for any emergency in future. I understand that the much smaller ants do the same. All these creatures are guided by their natural instinct of self-preservation, while Man in his over-confidence neither uses his instincts nor his intellect and tumbles along in life worse than animals.

The Wadars had instructions to cut the tails of the rats killed by them, and present them in the evening to the farm supervisor who will count them, and get them burnt in his presence, so that they could not be presented again next day for duplicate payment. As far I remember, 25 paise were paid for every rat killed. The young ones were counted as one full rat. This cruel killing went on for 70 days. On an average 1,000 rats were annihilated every day. At the end of this period Patel could bear it no longer and he telephoned to Seth Somaiya that the blood of rats was dancing on his head and the great sin being perpetrated in killing of rats will also fall on the Seth himself. The Seth got frightened and gave instructions to stop the killing forthwith. So, that was the end of the great cruel campaign. As for the eating of the rats by the Wadars of the Deccan, I am reminded of the appeal of Genda Singh, Minister of Food and Agriculture U.P., to eat rats for Vitamin B deficiency. I do not know whether any rats were eaten in U.P., but I do remember the public appealing back to the Minister to set the example. Chinese eat the rats with relish and I wonder whether they do not suffer from Vitamin B deficiency.

India is a land of unity amongst diversity, but diversity is very much there, which I personally experienced in Maharashtra during my 5 year's stay there. The public at large could

neither speak nor understand Hindi. It was a stroke of luck that the labour of the manufacturing department was mostly from Eastern U.P. and Bihar, where I had already worked for nearly 20 years, and so was quite familiar with their language and habits. That was one of the reasons for my success in the Deccan, as they whole-heartedly co-operated with me and put in their best. Working in a sugar factory, and in fact anywhere calls for a co-operative effort as no single individual can achieve anything worthwhile all by himself. The Assistant Chemists all knew English, and the English was translated by them to the other local staff. But I was unable to swim with the stream of life there due to the language difficulty.

All the meetings, dramas, Kirtans and other functions were held in the Marathi language which I could not follow, but I participated with enthusiasm in all their activities not to give them a sense of aloofness or segregation, which would have been very unwise. At this time the movement for the formation of Greater Maharashtra was gaining momentum, and one day there was an open violent fight between the local labour and the north Indian labour. It dawned upon me once again, that the reorganisation of states on linguistic basis, was a great blunder with its multifarious repercussions, which are raising their ugly head even today, and are defying solution. The country is being disintegrated in the name of integration. I definitely felt that I was not wanted there and started looking for a change to the north again. Through the intervention and courtesy of Raja B. Pittie, I was appointed Technical Manager of the Shanker Sugar Mills Captainganj, Gorakhpore, U.P., and once again moved to my home state after 24 years.

10

BACK TO UTTAR PRADESH

Since the start of my sugar career in 1933 till 1956 I had been in Bihar and Maharashtra, and returned to U.P. after a lapse of more than two decades, or to be more exact after 24 years. The sugar factory at Captainganj in the Gorakhpur district, was started by Seth Indrachandra Kejriwal of Calcutta many years back. It had seen good days, and made reasonable profits in the past, which were ploughed back in setting up a distillery and a dry ice plant nearby adjoining the main sugar factory. Somehow both these schemes misfired, and due to paucity of finances Seth Indrachandralji had to take Shri S. S. Kanoria as partner to provide the much needed finance. Before my appointment, I was interviewed in Calcutta both by Sethji and Kanoriaji exhaustively for two days, and when they were satisfied with my ability and experience, I was issued an appointment letter to join the factory as soon as possible. As per terms of my service at the Godavari Sugar Mills I had to give one month's notice before leaving and I did so, but till the time of my departure I kept on working with the same interest as before, and nobody could dream from my behaviour that I had resigned. It was my practice to give my best till the last day of working, and then to leave with all goodwill, both with the staff and mill-owner. I am happy to record that this attitude of mine was appreciated by all concerned and paid me rich dividends.

I was able to join the Shanker Sugar Mills in the third week of June 1956. It was off-season and I got the opportunity to make a good survey of the sugar plant, and study its problems by discussing with the old staff and minutely go-

ing through the earlier reports. In order to make improvements and ensure better working, the best way is to go through the history of the plant and its difficulties of working in the previous years, and to devise ways and means to remove them and improve upon them. Wherever I went I was able to bring about improvements in the factories and achieve better all-round working as regards crushing, recovery and the quality of sugar, the three vitally important things in a sugar factory that deliver the goods, and make an attractive balance sheet.

I discovered that the main trouble at this factory was the leaking of the filter presses for the filtration of muddy juice. This resulted in sending forward dirty clear juice and upset the working of all the stations that follow, i.e. evaporation, crystallisation in pans and the subsequent finishing process so as to bag finally brilliant white uniform crystal sugar. Further, due to bad maintenance in the past, the steam lines were all corroded and were badly leaking forming fountains of steam here and there, and almost everywhere. I made a dash to Saran Engineering Co., Marhowrah, and by my personal influence was able to get delivery of some new filter presses, which had been refused before. I was also able to get some of the plates and frames of the filter presses ground on the grinding machine at the Saran Works so that they made tight joints and stopped leaking. Next my attention was concentrated on the changing of the steam line. Some portions were already on order, and I ordered out some more which were in dire need of replacement. I was pleased to muster the service of one assistant engineer from the Sardarnagar sugar factory named P. L. Kalra, and he co-operated so well and put in such hard and sincere work that the whole factory was ready in time to catch the season 1956-57, leaving sufficient time for the initial trials to ascertain the quality of overhauling.

Raja Narayanlalji of Harinagar was always very particular regarding maintenance and proper overhauling, and I am happy to say that during my recent visit to the Harinagar sugar factory after 22 long years, I found that the boiler tubes and the steam lines are nearly all the same as were supplied with the plant 40 years back. Of course the original boiler chimney was gunited after 35 years and was standing like a grey giant

fit for many more years of service. I know that some factories in Bombay Deccan burnt molasses by sprinkling it on to the bagasse proceeding to the boilers, in order to compensate for the low fibre content of bagasse, and to save on extra fuel, but after-effects were disastrous, as the chimney of one or two factories collapsed during the season, causing huge losses.

So far, in my sugar experience, I know Seth Indrachandraji as the only man with money, about whom everybody from the labour, to the officers and the public spoke in high terms and nothing but praise. His treatment was loving and kind to all and sundry, as he realised the misery and the troubles of all, and did his best to help them in every feasible manner. This trait of his was the main factor which endeared him to everybody. As long as I was in Captainganj, he held me in the highest esteem and was only sorry that I could not be with him when he had full control over the factory.

Shri S. S. Kanoria was a young and intelligent man and a new entrant in the industry. Due to his hard work and sharp mind, he rose from success to success, and to top it all, was the President of the All India Federation of Chambers of Commerce and Industry in 1972. Now he owns a number of industries and is among the front rank of Indian industrialists.

B. Mukerji was the manager of the distillery. He was the younger brother of Justice Mukerji of Allahabad High Court. Mukerji was a very fine man and a good friend, and we spent some happy time together. He was himself a distiller, and controlled the distillery and ran it very efficiently almost single-handed. He was later picked up by the Birlas for their big distillery at Seohara, and is still there.

There was a senior Head panman at the factory for a number of years, but he was a hard nut to crack. I was informed that he did not care for the chief chemists, and also neglected his work, although he was a capable sugar boiler. The Head panman, who controls the pan floor and supervises the boilings, by which sugar crystals are made and grown, is a very important man in a sugar factory. In fact, he is next in importance to chief chemist, and he is also the highest paid man after Chief Technologist who is in charge of the whole manufacturing department. As this panman knew his job and also

had a number of workers under his thumb, nobody dared to disturb him. When he came to know that I had joined the Captainganj sugar factory as Technical Manager, he came to me a few days before the start of the crushing season, unlaced his shoes outside the door and came in with folded hands announcing his name and designation. I recognised him, as his name had already been mentioned to me as a very recalcitrant fellow. He spoke softly in these words, "My name is so and so, and I am head panman in this factory for a number of years. I heard that you have joined this factory, so I have come to tell you that now I will do my best and give you no cause for complaint." And he kept his word, and did excellent work throughout my term of office at that factory. I have narrated this small and insignificant incident to highlight the fact that the staff in sugar factories now is so clever and cunning that it is capable of measuring the ability of the heads of the departments in no time and behaves with him as he deserves.

Poaching of cane was a new term that I heard and learnt for the first time in this factory. The Cane Commissioner of the state allot areas of cane for each factory according to their working in the past and the installed capacities of cane crushing. These are called reserved area, and the respective factories have to draw their cane supplies from these areas only. Taking cane from the reserved area of another factory for crushing is illegal and is known as poaching. When cane is in short supply or to augment its total cane crushed, the factories or the staff resort to poaching. By experience I found that this poaching was nothing but a rouse to deceive and please the millowner who conceived that he got so much extra cane. But the other factories did the same, and got appreciation in return from their owners. And so it went on. The cane finds its own level like the water and flows to the factory which crushes more and without stoppages. I have found in my long experience that the neighbouring factories all close down together, whether they have more or less cane in their reserved areas. The cultivator is anxious to vacate his cane field and also to get money quickly, and he does not wait if he can dispose of his cane elsewhere. The Cane Act is also

defective inasmuch as it is binding ,on the factories, but not on the growers.

Genda Singh, the well known leader of the P.S.P. was a resident of a village nearby the factory. He used to come to see me off and on. I had a high opinion of his ability, knowledge, and the sincerity of work for his party. Several times in my presence he used to discuss politics with the Congress leaders of the locality, and the latter were no match for him. Genda Singh later joined the Congress and was Minister of Food and Agriculture in the U.P. cabinet for some time.

C. B. Gupta was at this time Minister of Industries in U.P., and as such I had to go to him for some work or the other. He was very helpful, and his disposal of work was creditable. The way to meet him was to go and sit in his waiting room early in the morning. It goes to his credit that he kept on living in the same small house as M.L.A., as Industries Minister, and as Chief Minister. He was a wonderful organiser and collected huge sums of money for his party. I am reminded of an incident in which the manager of a sugar factory went to Guptaji to hand over a cheque to him. At this time Guptaji was working in his garden with a kachha and a ganji. The manager mistook him for the Mali and called him so. On learning that he was the Minister himself, he handed over the cheque quickly and never dared to face him again. In the waiting room also, he would appear in scanty dress particularly during summer, sometimes newspaper in hand, approached each and everybody waiting, and disposed them all off in a matter of minutes. I have personal experience of this procedure as this was the only way to meet him and get the work done. Once he was out of his house he could hardly be traced or met the whole day, as he was always an extraordinarily busy man.

There was hardly any arrangement for the education of children at Captainganj. I was therefore, obliged to send my daughter Amita to Varanasi to study at the Basant School situated inside the Theosophical compound in Kamachha. She did not keep good health there and had to be called back. My son Atul Narain had to go to college to Gorakhpur, 30 miles from Captainganj, by morning train and came back by the evening train. Seeing the inconvenience and the irregula-

rity of meals, he joined the hostel and lived there till he succeeded in the pre-medical test for admission to Medical College at Kanpur, from where he passed M.B.,B.S. and M.S. in Ophthalmology, and later went to England to specialise in eye, ear, nose and throat. He is now an eminent surgeon in Calcutta.

Kushinagar, where Gautama Buddha attained Mahaparinirvana, was situated 20 miles from Captainganj in the Deoria district, which was formed after splitting Gorakhpur in two districts. It was a place of tourist attraction and Buddhists came from all over to visit the place and have a Darshan of the huge statue of reclining Buddha. On the 2500th. anniversary of Buddhism, Government of India constructed a beautiful asphalt road from Gorakhpur to Kushinagar for the convenience of tourists, and it was at that time one of the best roads in the whole of U.P. The long lying statue of the Buddha, in the posture of leaving his mortal coil, was massive and conveyed an impression of greatness and solemnity of the great Lord. I visited Kushinagar several times to accompany my relatives and friends who came to me to visit this sacred place of pilgrimage.

I realised here that the job of Technical Manager in a sugar factory is rather ill-conceived. There is already one chief engineer in charge of the engineering department and a chief chemist in charge of the manufacturing department. The Technical Manager is above both these important officers, and his job is to evaluate their work and guide them. If these two officers are capable people, they are not amenable to guidance and so this system does not work in practice. As such the factory does not get full advantage of the knowledge and experience of the technical manager. I soon realised that I was not effectively useful to the concern, and so started looking for a change. My stay at Captainganj was only for one and a half years, the shortest in my long sugar career extending over nearly 40 years. In view of my reputation in the sugar industry in India and internationally, I was soon appointed General Manager of the Ratna Sugar Mills Co. Ltd., Shahganj, district Jaunpur, U.P. and joined there to pass another eight years of my sugar career.

11

EXPERIENCES IN MANAGEMENT

The Ratna Sugar Mills Ltd., belonged to two families of Agarwals of Varanasi. One was Kashi Prasadji and brothers, and the other Rai Govindchandra and Sons. The ancestral business of Kashi Prasadji was grain merchants with branches all over India, and the Rai family were landlords and property-owners who used to be fabulously rich in the good old days. Kashi Prasadji's father laid the foundation of the Ratna Sugar Mills at Shahganj in the Jaunpur district of U.P. The site was selected as it was a good and flourishing Gur market. In the long run the location of the sugar factory proved to be at a wrong place, because the land surrounding the factory was all *Usar* and alkaline, and when I joined in January in 1958, no sugarcane was to be seen for miles together from the factory. Not only this, when the sugar factory was ready and tube wells were sunk for the supply of water, it was discovered that there was no sub-soil water anywhere in the factory area. It must have been a great shock and contract was given to a German firm to drill and find water with no success. Recourse was then taken to dig open wells at several places nearabout the factory, and surprisingly enough, one open well only 50 feet deep and 14 feet diameter, was now supplying all the water required to run the factory, although the supply decreased with the onset of summer and caused low vacuum and anxious days.

The mistake of not finding water after the factory is ready, did not happen at Shahganj only, but I know two other cases very similar to that of Ratna. One was at Kichcha near Naini Tal where Lala Prag Narain, the ice king of U.P., erected

a sugar factory. They dug deep but no water was available. When they were desperate, it is said that a Sadhu passed by, and saw their predicament. He advised them to go a little deeper and look, a mass of water started gushing from the earth's womb to form an Artisan well which is still overflowing. In another case when the cement factory of Jaidyal Dalmia was ready at Sawai Madhopur in Rajasthan, no underground water was available. Later, water had to be brought to the factory from a distance of several miles to make the venture viable, but the increased cost of water will remain an item of extra and unavoidable expenditure. This careless approach regarding the easy availability of water stems from the common conception and belief, that it is Nature's provision that water will be found anywhere and everywhere in the bosom of the mother earth. When I joined the Godavari Sugar Mills and the Seth told me that there was no sub-soil water in the area of his sugar factories, I emphatically declared that he was absolutely in the wrong. It is God's mercy that water is found everywhere, and he must be toiling under some misunderstanding to carry that impression. I had been all the time in the north, and always seen water underground wherever it was dug for. I realised only afterwards that there were areas in which there was no sub-soil water even upto great depths.

A few days after taking over at this factory I realised that the main problem there was the non-availability of good quality of cane in sufficient quantities. The factory used to start in the 3rd or 4th week of November and close down sometime in the middle of March year after year with low recovery per cent cane. It will thus be seen that short cane supply was the fundamental reason for the factory not to make any profit and run precariously almost every year. I learnt that the factory had not declared any dividend for the last 5 years.

There was one Baghel, a B.Sc. in agriculture and he knew the cane area and the surrounding people very well. He was also on good terms with the Cane Co-operative Development and Marketing Union of the U.P. cane department. I took him into confidence, studied the promising cane varieties for the region, and took a bold decision for the replacement of

the existing cane varieties by the more suitable ones. Cane seed was reserved at Barabanki, more than one hundred miles away, transported by trucks, sent to the prepared cane fields, and planted without any loss of time, so as to ensure positive and effective germination of the cane setts. This work was carried on on a war footing, as the cane seed arrived round the clock, and a whole night vigil had to be kept to divert the seed to the prearranged fields for plantation with expedition. This campaign was so successful that the supply of better quality of cane in greater quantities was available to the sugar factory and a good dividend was declared after the next season. This was a thumping success without any additional recruitment of staff by the factory, and utilising the services of the Government cane staff by tactful handling and personal influence. There were some factories in U.P. who tried to create a parallel organisation of their own for the development of cane in their reserved areas, and created bad blood between the cane development staff of the factory and the Government with no improved results. I feel sure that every factory zone could be developed with the active co-operation of the Cane Development and Marketing Unions working under the Cane Commissioners of states.

Cane supplies also greatly depend upon the working of the factory and the payment of cane price to the cultivators. There is an old saying among the cane cultivators. It is easy to grow cane, but difficult to supply it to the sugar factories. They are right to some extent, as issue of cane slips for cane supply is sometimes badly handled by the factories, and cases of corruption were also frequent. Further, if the factory runs intermittently with stoppages every now and then, the cane cultivators have to stand in the cane yard of the factories for hours, and in some instances the delivery of cane from the farm to the factory may take as long as three days. The trouble and suffering of the cartmen may be pictured during the nights of biting cold. If it rains, they have an hellish experience. If the factory works continuously without any abnormal stoppages, the cartmen are very happy, and the cane supplies automatically augment. Quick cane price payment has also a stimulating effect on the total amount of cane sup-

plied. The practice at Shahganj was to withhold cane payments to the cultivators, and pay Government dues in times of financial difficulties. On my initiative this trend was reversed. I delayed the payment of Government dues and paid the cultivators expeditiously their dues. With the better payment of cane price, additional cane supplies began to flow to the factory, augmenting the total cane crushed, and increasing the sugar production of the season, on which depends the profitability of a sugar factory.

My ability and experience as a sugar technologist also came handy to study the working of the factory with the chief chemist and the chief engineer, and to arrive at the solutions of pressing problems which had remained, by and large, unresolved previously. Some additions were also made to balance the plant and afford regular efficient operation of the factory. With my special knowledge of steam and fuel balance of sugar factories, extra fuel consumption was eliminated and bagasse saved to be sold to the paper factory at Dehrion-Sone. This makes a double saving by saving money spent on extra fuel consumption, and then making additional money by selling the bagasse saved.

As already mentioned, the factory was surrounded by *Usar* land. By experiments and study, it was found that the acid sulphitation press mud was an ideal reclaimer of the usar alkaline land. So I drew out a full plan for the reclamation of the alkaline land starting from the fields nearest to the factory, and I am happy to record that when I left the factory after putting 8 years of honest and hard work, green lush fields of healthy cane were visible around the factory, where nothing was visible when I joined. Work is its own reward, and when you achieve something worthwhile you get a feeling of satisfaction whether you get appreciation or not.

But if you hanker after appreciation which you are not likely to get, as the general tendency of the employers is to find loud fault fault when something misfires, and to keep quiet when approbation and appreciation is called for. This is in entire contradiction of human psychology, because 'that man works for money and dies for fame,' is not realised. I am of definite opinion that appreciation should be given when deserved, as encouragement

is one of the greatest stimulus and incentive for work in absence of appreciation the mind closes like a parachute and the saying that 'mind is like a parachute and works best when open', is a truism which cannot be denied. It is in the fitness of things, and in the best interest of the employer, to bestow confidence on his officers and give them enough scope and free hand to work and show results, failing which it is better to shunt him off and keep a man who can be confided upon. Only under those circumstances best working results can be achieved, and production can be maximised with efficiency. I know several cases of very capable technical men, who were not treated well, and thus the industry lost their valuable services in the greater cause of the sugar industry. "Keep a man after careful selection and then give him confidence and scope to work", is my formula to get the best out of a man, because under these conditions only he will be enabled to give you his best, both from his knowledge and experience and dedicated and hard work.

The cane supplies to feed the factory were drawn by bullock carts, railway wagons, and trucks. Bullock carts all came at the gate of the factory and were weighed by the factory staff, but the cane received at the out-stations, starting from about 10 miles away from the factory, was weighed and channeled to the factory by means of a system of cane contractors, who kept their own staff at the out-stations, weighed, unloaded and loaded on to the waiting trucks or railway wagons ~~as~~ the case may be. The contractors were paid a certain commission for this service, and the cane weight received at the factory gate was the weight to be paid for. This system was very easy for the factory, as it had no headache of recruiting the staff on the rolls of the factory with all its attendant botherations, increasing with the passage of time, but the conduct of the contractors was far from satisfactory. They were in the habit of following dishonest and corrupt practices to underweigh the cane of the poor cultivator in spite of the frequent visits of the Government cane inspector for strict checks on cane weighed to save the cultivators from unnecessary loss. The cane inspectors were also amenable to the greasing of their palms, and so in effect the destitute sugarcane grower was at the mercy of exploiters and swindlers. In order to justify their existence, the cane inspectors, sometimes started

prosecutions under the Cane Act and Rules, but mostly the evidence was lacking and the cases were acquitted or dismissed by the courts. The trying magistrates, who used to be S.D.O.'s, hardly knew the Cane Act, and were guided by the advice of the Public Prosecutor who was also not interested in the cultivator. As I was the Occupier of the Factory under the Cane Act, I had to attend all the Cane Act cases as accused, in five districts of Jaunpur, Faizabad, Azamgarh, Sultanpur and Varanasi, and after one or two years of court case work, I became quite adept in the Cane Act, and was able to guide the legal council in its conduct in the court. Roughly out of nearly 50 cases in 8 years at Shahganj, fine of Rs. 30/- was imposed in one case only and the rest were all acquitted or dismissed. But the waste of time and harassment was its own punishment. I had to sit sometimes in the court for a whole day, when in the evening the magistrate would fix another date for hearing. I cannot find fault with the magistrates either, because case work was only a part of their multifarious work including law and order, which had to be given priority over the routine legal work. I also saw first-hand the widespread corruption in the courts, and I have no solution to suggest, as it is only a reflection of the deterioration of the moral standard of the public at large. Here I cannot help saying that the word Secular in our Constitution has come to mean irreligious for all practical purposes, and is one of the significant reasons of the lowering of the ethical standards. We are apt to blame the children, but children would be what their surroundings make them. They cannot be otherwise. The atmosphere in the home, in the school and the neighbourhood society, is what he will imbibe, and he should not be blamed if he is indisciplined and obstinate. No society can be moral without a sense of religion, and its inhibitions and restraints, and this has been time and again emphasised by the Shri Prakasa and other education commissions, but without any follow-up action.

Due to all these corrupt practices, the cultivator was disinclined to deliver cane at the out-station purchasing centres, and I saw many carts wending their way from 20 miles and more to deliver their cane at the factory gate where they were sure of correct weighment of their produce. I had suggested to the

Directors to eliminate this system of contractors, and I was sure that the much needed and wished for cane supplies would increase, but they could not see their way to enforce it.

The drawing of cane by railway wagons was very unremunerative. There were daring thefts of cane on the way, and as the cane was delivered in bundles, it was easy to throw away bundles after bundles of cane from the wagons, and then either to sell the cane to the Gur manufactures, or to load it in bullock carts and deliver it to the factory gate. Further, there was heavy imposition of demurrage of the wagons not released in 5 hours after placement in the factory yard. This time of 5 hours was and is very unreasonable as far as sugar factories are concerned. The wagons arrive in clusters and it is not feasible to release them all in a matter of 5 hours, and ways and means have to be found to minimise this unremunerative incidence of demurrage which can run into half a lac of rupees or more in a cane crushing season. In fact I was faced with an outstanding railway demurrage of Rs. 42,000/- when I joined the Ratna Sugar Mills, but I am glad to record that it was reduced to Rs. 2000/- to Rs. 3000/- in a period of two years by better and non-stop factory working, timing the cane supplied by trucks and carts, and tactful handling of the railway staff. As manager, one has forcibly to do many things which he will not do as a free man, but that is a part of the game.

A few examples will illustrate. There was a great pressure from the Head Office to despatch sugar by wagons to several stations in Madhya Pradesh, but no wagons were available. Being new to the job, I telephoned the Divisional Superintendent of the Northern Railway at Lucknow, requesting him for the supply of wagons, and he in turn, passed on instructions to the Station Master, Shahganj station. I felt relieved and informed the Head Office at Varanasi accordingly. The factory railway clerk was sent to the railway station to approach the Station Master and make a request for wagons to load sugar. The Station Master refused outright and said to the factory clerk, "Go and inform the Manager that henceforth the D.S. will supply the wagons and not I." I was flabbergasted, held consultations with my railway clerk, who advised me to call the Station Master for tea and have a deal with him for

the supply of wagons. This was done and wagons were pushed in our siding more than required.

In another instance at Harinagar, an urgently required mill roller was not received from Saran Engineering Works, Mardhowrah after reshelling. Several officers were sent one after another to trace it out, but with no success. Then the Assistant Manager himself went, and accidentally located the roller lying in a wagon in the yard of the Sonepur railway station. He went directly to the D.T.S. and made a complaint of the railway neglect. The D.T.S. called the Station Master of the Sonepur station and gave him clear instructions to despatch the roller to Harinagar without any further loss of time, as it had already been greatly delayed in transit. The Station Master coolly replied, "Sir the wagon on which the roller is loaded is sick, we have already sent message to Allahabad for the supply of a suitable crane to lift the heavy roller for unloading it and then loading it on another wagon. Only then it could be further despatched." All this procedure would have easily taken a week more. The Assistant Manager then tackled the Station Master himself. A Khalasi was called, instructed to put two buckets of cold water on the hot axle of the wagon and then attached it to the next train going to Harinagar. In my 8 year's of handling management in a sugar factory, I have learnt that the best way to get anything done is to approach the lowest level by which the work is done quickly and cheaply. The delaying tactics and the red-tapism is such that a file can easily take one month to move from one table to another situated adjacently. Files disappear also from Government offices, even in the central government, and the high ups find themselves helpless.

Previously I had handled labour as head of the manufacturing department, but never in the position of a General Manager, whose much precious time is consumed these days in attending to labour demands and disputes which are a legion. Just when I joined, a strike had been averted, and an agreement arrived at, which I had to implement. I was not familiar with the labour laws and the Standing Orders as in force in the U.P. sugar factories, and so had to put in hard work and burn midnight oil to study them all in the least possible

time without which it was not pragmatic to take any decisions or enforce any agreements with the labour and the management. I must here give my thanks to R. C. Agarwal, Chief Accountant, who had been in the employ of this factory for a number of years and knew the labour legislation current in U.P.

Lot of my time was taken with all these labour matters to which I was not accustomed, having been so far exclusively a technical man, and was rather ill-at-ease for accepting a non technical job with which I was neither familiar nor very suitable due to a very conscientious temperament. But I soon realised that the labour trouble was primarily due to broken promises and unfulfilled agreements. I found that the labour had lost all confidence in the goodwill of the management and had formed the impression that the management was out to exploit them by means fair or foul. What relations could be expected under these circumstances was clear as daylight to me in a few months.

I adopted a modus operandi to resolve all the labour disputes by imparting a sense of confidence in the management as their friend and not their foe. They soon reciprocated, and a spirit of goodwill was brought into existence which had been lacking. Whatever I promised, I delivered and soon the confidence of labour was so much that they did not even ask me to render in writing my promises. As for the demands I assured them that all reasonable demands will be conceded, but the unreasonable ones will not be given, and fought till the highest court in the land. I found that the labour officers of the Employers' Association of U.P. with headquarters at Kanpur, were doing good service to the industries by giving them necessary legal advice on labour matters, and also fighting their cases in the labour court at Kanpur. I made it abundantly clear to the labour that I was their friend, but as manager I had to look after the interest of the factory, and they have to look to the interest of the workers, but there should be no loss of goodwill between the labour and the management. This I achieved to such an extent that I used to take labour leaders in my car to the court to fight out our cases, and did it with all the honesty and sincerity

at our command, but came out again as friends from the court, and drove back in the same car. The managers from other factories could not understand this behaviour of the management, but it paid rich dividends. Soon there were no labour disputes at the Ratna Sugar Mills for a number of years. I will always remember the remarks of the Regional Conciliation Officer of Varanasi, who said that he was not even aware that there was a sugar factory at Shahganj in his region.

Before the year 1947 there were hardly any labour unions in sugar factories, and I am fully convinced that it was the unfair treatment meted out to labour, which was the cause of the formation of labour unions to protect their interests. Old workers' who had been doing their duty with satisfaction and honesty, were dismissed in a moment and allowed to roam for days together without even clearing their account. The provision-store dealers would then stop their sales to these persons, and they would virtually starve with no sympathy from any side. There was no hearing, and no opportunity was afforded to them to plead their case. There is an action and there is a reaction. If you keep a spring pressed down for any length of time and release it, it will spring and perhaps, hit the ceiling. Something of that type has happened in the labour and management relations now. It is on the other extreme, so much so, that the labour wants to extract the maximum while doing minimum work. On the other hand the employer endeavours to pay the least and get the maximum work. There has to be a compromise somewhere between these two conflicting interests, and unless a via media is found out, the dissatisfaction will continue on both the sides and the production can never pick up. According to me both the labour and the management are to blame for the present impasse, and a change of hearts is incumbent at both the doors. Change is the law of nature and it has to be realised and appreciated.

Chief Chemist Bhargava left us and joined another sugar factory in the South. The Cane Manager also left just when the season was about to start. It was not possible to recruit suitable officers at this time and so it was decided that I carry on and look after the work of both these officers also. Both these jobs are full time jobs, and that is the reason why diffe-

rent well paid officers are kept. Besides this, I was the Occupier also for the Cane Act and had to attend the various courts, in season and out of season. As my training was that of a chief technologist, I soon controlled the whole manufacturing working, and was also able to look after the cane department. I learnt to organise, deputise and supervise without which it was impossible to do all the three whole-time jobs satisfactorily. I have seen that the mill-owners, sometimes more than one member of the family, are all busy all the time almost on a war footing, but are unable to manage properly even one industry, while one member of the Birla family controls and runs a number of industries all alone with the best results and efficiency. What is the secret? Requisite organisation and effective indirect control on every aspect of working.

There were some unusual facilities being given to labour at this factory. One was that if any worker received any injury on the place of work in the factory premises, he was deemed to be on work and his attendance was continued. Further all the expenses of his treatment and even the salary and the fooding of one attendant were borne by the factory. Taking advantage of this benevolence of the factory, the fooding bill of the injured worker contained such items as Badam and Pista plus expensive fruits. When I saw all this I discussed these spectacular expenses with the leaders of the labour unions, and exhorted them not to play such frantic tricks, otherwise they will lose all sympathy of the mill-owners, and also the special facilities which they could not claim by any stretch of imagination. The leaders took the hint and agreed that the food expenses be given on the basis of salary as per schedule of the factory. Besides all the above concessions, the workers were entitled for the workmen's compensation also. In the same way the needy workers were granted upto three month's salary, as interest-free loan, on such occasions as marriage or death in the family or serious illness. I discovered that this facility was also being misused. The tendency of the workers was to apply for advance or loan even on flimsy grounds. Rupees 25,000/- were earmarked by the company as advance to the workers and it was always fully advanced. One day a few officers of the co-operative society of Jaunpur approached

me to assist them in starting a co-operative credit society to give loan to the workers at 9 per cent interest. I called the Labour Welfare Officer of the factory and also the leaders of the labour union and the scheme was explained to them by the representatives of the co-operative society. The leaders informed the representatives regarding the facilities afforded by the factory at which the co-operative society officers slipped off quietly.

Speaking of Labour Welfare Officers, I realised that this job was an anachronism in practice. The Labour Welfare Officer is the servant of the company, and is expected to look after the welfare of the workers. Of course, the job is a must under the Government orders, and is partly protected, but in practice it is meaningless, so much so, that in some factories I heard that the Labour Welfare Officer was known as the labour farewell officer. His position is entirely anomalous, and in practice it has become a job of no importance either from the point of view of the factory or the labour, except that a provision of employment is made for a trained graduate. They have no fixed duties and in fact nothing worthwhile to do. One experienced manager told me, "If you want to spoil the life of a young man, make him a labour welfare officer in a sugar factory. In course of time he will turn into an idler, lost to himself and to the society". With my actual experience of these glorified officers at Shahganj, Captainganj and Saharanpur, I am inclined to support this opinion of that experienced manager. Perhaps if he is a full time Government servant, he may be more useful to look after the welfare of labour, failing which this job will remain as unproductive as it is today.

Under the initiative of the American Government, the first Development Block was started at a village Maheba in the Etawah district of U.P., and its tremendous success led to the formation of blocks all over U.P. In the working of these blocks also, I found the reflection of the general deterioration of morals and inroads of corruption. As there were no irrigation facilities for cane agriculture in and around the Shahganj sugar factory, construction of open masonry wells was the only alternative for irrigating sugarcane. As such, construction

of these masonry wells became almost a rage with me, and I started exploring all the possibilities by which this campaign could be pushed up. The Blocks and cane development unions were the two visible sources which I tapped to the utmost. But I was astounded to notice that the bills for the construction of wells were passed and paid, subsidies withdrawn, but wells were non-existent. Although I can say from personal experience that the scheme of development blocks was all-comprehensive and covered almost all the activities for the arround development of the villages, the net result was lack of achievement of the objectives, not to any inherent defect of the original plan, but due to its faulty implementation, and widespread corruption. No plan, however well thought and calculated can succeed when character is lacking. I read in my school days that "if wealth was gone, nothing was gone, but if character was gone, everything was gone." With the prevailing yardstick, the above axiom is turned upside down, and has been transformed into, "if character is gone, nothing is gone, but if wealth is gone, everything is gone." If this yardstick is applied to the present ethical insolvency and complete erosion of character, many unexplainable things can be explained.

I had always a burning desire to be useful to the society and do some social work to satisfy my inward urge. There was one government primary school functioning just by the side of the sugar factory. I induced my wife, who had spare time to take interest in the education of small children and so I went with her to pay a visit to this school. We were shocked to see its terrible condition. Some dirty children were sitting on a torn mattress, and the so-called teacher was sitting on a broken chair, chewing pan and spitting on the floor. To me primary education, which lays the foundation of all future education, should be of the best type possible to make the future citizens of India, but what I saw was enough to unmake any citizen. And then we complain that the children and the youth were all out of control and indisciplined and not amenable to teaching. No wonder that when the foundation is so dilapidated and unsound, the superstructure can never be strong.

We therefore, decided to start a primary school at our house in the sugar factory. I contacted the president of the labour union and told him that I was desirous of starting a small school where my wife would teach children who have completed 4 years of age. The experiment was started in all earnestness, and there was such a rush of small children that we took 30 and then stopped to the great disappointment of the parents. We not only gave them lessons in reading and writing, but concentrated on imparting culture and improved behaviour. The experiment was a great success and continued for five years till I left the services of the company. These children of the low level clerks and labour attracted the attention of the school authorities in which they were admitted for secondary education, and enquiries were made about the school in which they received their primary alround education. This was our reward and we had a sense of satisfaction of having done some good to the society.

Since then I am convinced that there are many well-to-do families in India, where ladies can find time, or sometimes fill up their spare time, to do this kind of social service: as to me personally imparting education of the right type is the greatest good and service that a man can do to humanity. Feeding the body is a good and charitable act, but to feed the mind is much better. I also appeal to the Government to give their prior attention to primary education, and the formation of character in the early life rather than opening universities after universities and turning out unemployable youths with all the present problems and devastations.

Genda Singh, the P.S.P. leader of the opposition in the U.P. assembly had once said that the poverty in eastern regions was so acute that the poor people were taking out grains from the dry cowdung and eating them. When I read it in the papers I took it as just a fling at the ruling party, but one day while touring the ~~case~~ area of Shahganj factory, I actually saw a Raidas beating dry dung with a stick. I approached him to look at close quarters and was shocked beyond measure to observe the truth of what Genda Singh had narrated in the assembly some days back.

I had been reading and hearing that cowdung should not

be burnt, but should be used as manure to supply the much needed organic and humus content to the soil. Even the book *Our India*, written by Minoo Masani long back contains a potent suggestion not to burn the dung, but use it as valuable manure. With my Development Officer, while touring the cane areas I tried to ascertain whether there was any diversion of dung from its use as fuel to its use as manure, but I was completely disappointed to witness big heaps of cowdung cakes in almost all the villages I visited. I discussed this point with some educated and influential persons in the villages, and they told me that unless and until there was alternate arrangement of cheap fuel in the village itself, simply propaganda could serve no useful purpose and I did see it for myself.

The Khadi Gramodyog has invented a cheap and easy method for the production of burning gas from the dung, which can be used as fuel in the villages, and the remaining dung is still useful as manure. This project needs demonstrations and the necessary propaganda which may catch the eye of the cultivator as it has practical application and feasibility. I saw such a plant at the Harinagar Sugar Mills during my recent visit to that factory. Two plants were working successfully, one at the bungalow of the managing agents and the other at the house of the tractor engineer.

There was a concentration of Agarwal officers at the Ratna Sugar Mills. The General Manager, the accountant, the store keeper, the cashier, the cane manager and the time keeper were all Agarwals. I have observed that in the Indian sugar factories, the staff and particularly the main officers generally belong to the caste of the mill-owners. Punjabi factory will have mostly Punjabies, Marwari factory will have Marwaris, Parsi factory will have Parsis and so on. It appears that there is a feeling of increased confidence on the persons of the same sect. Sometimes it is true and sometimes not but the practice of employment continues to be the same. With all the high sounding advice and some ineffective endeavours, the fact remains that castes have come to stay. I have seen that elections, even of the ruling Congress party are not free from this scourge of casteism. Bihar for many years was in the grip of Kshatriyas and Bhumi-hars. The village level elections are all fought on the basis of

castes. It will take a long time to fulfil the tenets of our Constitution.

Since childhood I was attracted by the story of Ramayana and the righteousness of its characters, particularly of Shri Rama. As such He became the deity of my worship. After joining the Ratna Sugar Mills I came to know that Ajodhya was only 60 miles from Shahganj in the district of Faizabad. So just after the end of the season, I made a programme to drive to that holy place of my childhood dreams. I was astonished to see a posse of police just at the entrance. I was informed that a case has been going on for years between the Hindus and the Muslims for the possession of that place of worship. The police party was deputed by the court to maintain peace till the case was decided. That was the year 1958 and I am not aware whether the case has been finalised.

It was lucky that I could make trips to visit Kashmir, South India and Rajasthan. I visited Kashmir in 1959, South India in 1961 and Rajasthan in 1963 just after the marriage of my son. I would not give any details of these trips as these places are well known to all and sundry, but I cannot help mentioning some incidents entirely personal. In Kashmir we were living in a house boat which is peculiar to Srinagar alone in the whole world. These boats are just like floating hotels and it is an experience to stay in them. They were made long ago and all belong to Muslims. The owner was an old Mohammedan and soon we developed quite a familiarity with him. One day when he was in good mood I enquired from him whether he would like to opt for India or Pakistan, his reply was remarkable. "We are very thankful to India for all the help, but our religion is Islam." That was an indication of the shape of things to come. I do not know what he would reply now, after the genocide in East Pakistan and the birth of an independent and sovereign Bangla Desh.

Another thing that struck me was the construction of Shalimar and Nishat gardens in Srinagar by Emperor Jehangir. How he used to go there in a palanquin from Delhi, which was his capital and how he managed to build these beautiful gardens at such a distant place beggars imagination. I further was able to confirm now after nearly 20 years what the world

explorer told me in America that in Kashmir you see "naked beauty", while in Switzerland it was too much touched by human hand.

The trip to South India in 1961 was memorable in several ways. The itinerary was rather extensive. It started from Banaras to Bombay, Poona, Bangalore, Mysore, Ooty, Coimbatore, Madurai, Rameshwaram, Pondicherry, Madras, Mahabalipuram, Pakshi Tirtham, Tirupati Balaji, and back. The temples in the South are quite unlike the temples in the North. The Minakshi temple at Madurai and the Rameshwaram temples are gigantic forts, surrounded by fortification walls to protect the deity from the inroads of Muslim rulers. The temple of Lord Venkateshwara at Tirupati is the richest temple of India. The offerings in terms of money per year are of the tune of Rs. 10 crores. It is not known who built the shrine, but it has been a place of pilgrimage for centuries. On an average 20,000 to 60,000 devotees visit this shrine every day, and the number snowballs to 200,000 on festival days. The management is carried on by a trust called Tirupati Sansthanam and is efficiently administered. The scene of the young pretty ladies being shorn of their long flowing hair in fulfilment of some vow looks very strange and also a little tragic. Beautiful young girls who enter with full grown luxurious hair come out of the shaving hall almost unrecognisable. The immensity of this shaving of the hair can be imagined from the fact that a wig factory is working in the Tirupati town down the hill, and manufacturing real human hair wigs for export to countries in the west where the wigs fetch remunerative prices and earn valuable foreign exchange. There are many rooms and cottages run by the Sansthanam where previous arrangements for stay and meals etc. can be made in advance. The temple is worth a visit.

Another place which fascinated me was the Arvind Ashram in Pondicherry which used to be a French possession, but now is a part of India. Nearly half of all the ci' and the buildings belong to the Arvind Ashram, and it is a place where dedicated people from all over India have found a haven of peace and tranquillity.

The year 1963 found me in Rajasthan. The places visited

were Jaipur, Nathdwara Temple, Udaipur and Mount Abu. Jaipur is really a pink city as it is famed. The whole city was planned by Maharaja Jai Singh who lived in the famous Amer palace. Nathdwara is an old and perhaps the richest temple in Rajasthan. But it was rather badly managed and the rush at the time of Darshan was unruly and uncontrollable. Udaipur Lake Palace is a bold conception, beautiful marble construction, but now converted into a hotel which points out to the past glory, and grandeur of the Maharajas.

Mount Abu is only 4,000 ft. high and is not cool except in the evenings. The Nakhi lake is a place of attraction and is pretty and scenic. But the most remarkable and almost unbelievable were the Jain temples at Dilwara, a few miles from the proper Mount Abu. When I entered the marble extravaganza I could not believe my own eyes. I had seen the Taj Mahal many times as I was a student at Agra for six long years, and seen it year after year specially on the Sharad Purnima when it is the prettiest. But the Taj and its workmanship appeared tame in comparision with Dilwara. The carvings, the cuttings in faultless white marble draws the simile of Tulsidas when the Sakhis of Sita said after seeing Ram and Lakshman in the Batika, "How can I describe the two princes. The eyes which have seen them have no tongue and the tongue which has to describe has no eyes". I felt something like the same after witnessing the Dilwara temples.

After a lapse of eight years of devoted work at Shahganj, I felt that the differences among the directors were making my position rather embarrassing, and I made up my mind to quit and again find a job of a Chief Technologist to get rid of the multifarious worries and tensions connected with the job of a General Manager. I was lucky and soon got the job of Chief Technologist at the Lord Krishna Sugar Mills in Saharanpur, Western U.P.

12

THE LAST SUGAR JOB

The Lord Krishna Sugar Mills belonged to Lala Shiv Prasad of the Kundan Lal family who purchased, first of all, the Amroha Sugar Mills and then acquired or installed one after another till they had half a dozen sugar factories in the command of their family. They came originally from the district of Ambala, where they were owners of brick kilns, but with their hard work, cleverness and the spirit of enterprise, rose from riches to riches. Lala Shiv Prasad was bold and a fighter, and when the Syndicate fixed quotas of crushing in a season of over-production of sugar, he exceeded the limit and filed a case against the Syndicate, or fought a case filed by the Syndicate. He was fined, but he had no regrets, because the profit that he made by over-crushing was more than the fine. He so managed the finances of the sugar factory that out of the profits of the sugar factory and also by delaying tactics in the payment of cane price to the cultivators, he erected a textile mill adjoining the sugar factory. Lala Shiv Prasad was no more when I joined, but I had heard about him and his rise beforehand. His six sons were in the possession of the sugar factory, out of whom the eldest looked after the textile mill, and Seth Sushil Kumar and Seth Ramesh Chandra were looking after the management and the running of the sugar factory.

There were a number of problems facing the factory when I joined. During the previous few seasons the recovery per cent cane had been low, extra fuel consumption considerable, milling performance low and the profits dwindling. Very little or no attention was paid to cane development and so the quality of cane and its supply were both far from desirable. The

Chief Engineer Khushi Ram Saini, although not qualified, was a good practical engineer and was running the old patched up plant rather well. He was very co-operative also, and it was due to our combined efforts that we could solve almost all the problems facing the factory and ran the plant much better than in the previous years.

As the cane crop was ready in the fields there was no chance to carry out any cane replacement work, but a detailed study was made of the factory beginning from the cane carrier to the sugar bagging end. As the mills were already assembled for the impending season, nothing much could be done as regards mill setting etc. for getting better milling extraction, but on studying the details of the boiler furnaces I discovered that some former engineer had decreased the grate area of the step grate bagasse burning furnaces. It was an urgent work if more steam was to be generated from the same boilers, and on my suggestion, necessary alterations were expeditiously made and the area increased as far as practicable. I also examined the clearing of the boiler tubes, the drums and the baffle walls governing the passage of the flue gases. A detailed study was made of the dimensions of the flue and a constricting construction inside the flue was pulled down to allow a free and unobstructed passage to the flue gases through the chimney.

The steam balance in a sugar factory depends upon the efficient generation of steam and then its efficient utilization in the boiling house. I discovered that the arrangement for the return of the hot condensates were unsatisfactory. Some best condensates were being drained out while almost all the condensate pipes were unlaged. Further no vapour bleeding was being practised. It goes to the credit of the technical officers that in spite of the fact that all prime movers and the pumps were entirely steam driven, a satisfactory steam and fuel balance was achieved, and sufficient quantities of bagasse saved even in the first season. After being convinced of my ability and sound advice, a vapour cell of 8000 sq. ft. heating surface was installed, with vapour bleeding connections to the two existing triples, all the juice heaters and three pans. This improved the heat balance so well in a completely steamdriven plant that the Chief Engineer jocularly used to say that the vapour cell was

our turbo-alternator which was to be installed for improving the steam balance and do away with extra fuel consumption.

During the off season I got the details of the rollers, and made elaborate drawings of the settings and the trash plates for the coming season, and cast steel trash plates were ordered out accordingly. As a result of all these innovations, the milling improved considerably and the moisture in bagasse came down thus boosting up the calorific value of natural fuel. Thus with all round improvement, continuous crushing without any unusual stoppages was achieved.

As regards the boiling house in my direct charge, strict control at every station was enforced. Steam consumption at every station, water used in the presses and the pans, and also the centrifugals, were metered and reduced. The straight three massecuite boiling system was introduced which according to my experience gives good sugar, the highest capacity of the boiling house and the lowest steam consumption. It involves no remelting of the sugars and so gives the lowest losses and the highest recovery. In the process of remelting, it is not possible to recrystallise all the sugar that has been melted and there is some additional loss in molasses. The sugar remelting is taken recourse to, to improve the quality of sugar, but if strict control is kept on the clarification process and also sufficient attention is paid to the mixing of molasses, it is possible to make very good sugar by the three straight boiling process. It was a revelation to me at the Maharashtra Sugar Factory where the famous technologist P. K. Desai was working that he was making 49 per cent massecuite on cane while I was making only 36 per cent massecuite on cane with the same recovery. Still the quality of sugar was the same as produced by me at the Sakarwadi factory. There seems to be a misconception that better sugar will be produced by the melting process, but my experience has been that it is the strict control of the process which produces good sugar and not just the process.

Cane is a perishable raw material and its delivery to the factory and its immediate crushing is of paramount importance which is often neglected with considerable reduction in recovery and the consequent difficulties in clarification and crys-

tallisation. The time factor is very important and minimum time should elapse between the harvesting of cane and the bagging of sugar. The whole process of sugar manufacture from the feeding of cane in the cane carrier to the packing of sugar in bags should be the quickest possible. The sugarcane juice also is highly sensitive to acidity and alkalinity, and a neutral juice is called for almost in the whole process to inhibit the loss of sucrose and its inversion into invert sugars which are uncrystallisable, and pass on in the final molasses. The chief technologist should concern himself with this aspect of the sugar manufacturing process without which he will not be able to give the best results in any sugar factory. In a spirit of co-operation for the best interest of the factory, I used to visit the cane purchasing centres to improve the supplies of fresh cane, and I have found that if all this work which looks like interference in the other departments is done in humility and without pulling anybody's legs, the necessary co-operation is forthcoming without any bad blood.

Maturity-wise harvesting of cane is another practice which can improve the recovery from the standing canes in the field. I was already convinced of its utility and the management whole-heartedly co-operated in this scheme carried under the supervision of the Director, National Sugar Institute, Kanpur. I am sure that if properly and efficiently followed the recovery of the season can easily go up by 0.5 per cent which in terms of money would work out to at least an extra profit of Rs. 5 lacs in a five month's season in a 1,000 ton sugar factory. The chemical staff including the manufacturing chemists and supervisors and the analytical staff of the laboratory, if called a month before the starting of the crushing season can cope with all the work of maturity-wise harvesting, and thus bring additional profit from the same cane.

I also got experience of the disastrous Pyrilla attack in one of the seasons at Saharanpur. The pyrilla moth sucks the leaves and prevents the process of photo-synthesis by which sugar is manufactured in the leaves and then transported to the stem of the sugarcane plant. The leaves become pale and lifeless and the sugar recovery can fall from 9.5 to 6.5 per cent under a bad pyrilla attack. When one entered the cane fields,

swarms of pyrilla moths and the nymphs could be seen covering the whole leaf. With the help of the cane department of U.P. Government, aerial spraying of Malathion was resorted to, and I saw that it was very effective if properly done from a low height and fine spray should cover the whole cane field. Sometimes the spray nozzles were defective and Malathion was wasted in a small area without efficient fine atomization. With maturity harvesting and Malathion spray in our factory area, the fall in recovery was much less than the other neighbouring sugar factories and so our efforts and expenses were more than compensated in terms of additional sugar.

Here I must confess that the predicament of the technical officers in sugar factories is far from being enviable. At present the mill owners have no control over labour, who are protected or more than protected, under the various labour laws, but the poor officers are at their mercy, and this helplessness of the officers is fully and unabashedly exploited by the owners. The services of the officers are strictly temporary and insecure. The roots of their service are said to be 9" above the ground and not even on the surface of it. As the mill-owners are quite powerless against labour, they seem to take pleasure in getting the feeling of importance by their discourteous behaviour towards the technical officers, because these are not protected in any way. The Government is working under an impression that the technical officers are capable enough to look after themselves. If the labour does not put in its best, the officer is to blame, while the officer is baffled as to how to extract work from those who are permanent while he is insecure. I have heard labour say to their officers, "Sir, many officers have come and gone, and you will also go, but we will remain here". And they are only stating a fact of life. If the officer takes some strict action, the labour goes on strike and the poor officer is dubbed as tactless by the management. If he is lenient then also the production suffers because he is taken for granted by the labour. The officer is all the time on the horns of a dilemma and it is almost impossible for him to get out of it.

To add to his troubles, under the Standing Orders in force in the U.P. Sugar factories, the technical head has no power to

take any action against any of his assistants or labour of his department. The only course open to him is to make a complaint in writing to the manager. As is usually the case in 90 per cent of the cases the management is unable to take any action against the defaulting worker due to the dominance of the labour union or unions. Thus the already weak position of the officer is further spoiled, and consequently there is open defiance of his instructions and authority, precipitating further indiscipline. Under these circumstances, the technical officer is unable to give his best to the factory which he purports to subserve. He then is seized by the unfailing law of psychology, his enthusiasm dampens, and his mind is dulled. As such he is unable to utilise his ability and experience any more, but marks his time. He starts looking for a job elsewhere, and perhaps the management is also looking for another more competent officer and so the circle goes on. A capable, but frustrated and discouraged man cannot deliver the goods.

The quick change of technical officers is very deleterious to any industry, and particularly to a sugar factory which is a seasonal factory. I have seen very nice factories whose machinery was tottering after 4-5 years of working due to the change of chief engineer every year. In such cases the long range view is entirely lacking, and every chief engineer has only the season's visibility, does not pay any attention to the maintenance of the machinery and leaves after the season to find another job. The new chief engineer has not seen the running factory, and it is not practicable for him to give requisite attention to the various sections of the sugar factory, so that it may give faultless running during the coming season. I was told in Java that the chief engineers are given leave in the season after one month's satisfactory running of the plant. The chief engineer has to bestow all his attention on the correct repair and overhauling of the machinery in the light of his experience during the previous season. It will thus be appreciated how important it is to maintain the continuity of the officers if efficient working of the factories is desired.

Technical officers also, in their own interests, should avoid frequent changes from factory to factory. The old saying that "A rolling stone gathers no moss", is still true. If one does

not stick to a factory for a few seasons at least, he hardly gets any experience which is worthwhile; and thus does not gather any moss.

I have seen that the best managed and run sugar factories are those which have a good team of General Manager, Chief Engineer and Chief Chemist. The view of the mill-owner who tries to manage himself is subject to several limitations. He cannot have the same broad spectrum as a general manager, and acts in narrowness when wider vision is required. The importance of finding the correct officers also cannot be over-emphasised, but once they are selected and appointed, give them trust, powers and scope to work and show their best, and I feel certain that the mill-owners will not regret this method of working.

Lord Krishna Sugar Mills was the only sugar factory where I worked, which was situated within the municipal limits of a city. There are both advantages and disadvantages to a sugar factory thus situated. The General Manager of Motihari Sugar Factory used to tell me that he had to face a good deal of embarrassment from the Government officers who were all living in the vicinity of the factory. Some asked for transport, others for contributions or sugar, and still others were looking for infringement of some rules and regulations to press for their demands and gratifications in some form or the other. But on the other hand, in case of urgent assistance from them, it could be readily had and much inconvenience of running to the district headquarters for ordinary routine matters and requirements, were obviated. Another advantage, specially in Saharanpur was the easy availability of almost all store materials required for the sugar factory. Thus locking up of money in stores was saved, and the smooth running of the factory was assured, and stoppages reduced by obtaining materials wanted for urgent repairs.

Further sugar machinery was available in Saharanpur itself from Saharanpur Engineering Works, and also from Jagadhari in Haryana, only 18 miles from Saharanpur, where Saraswati Engineering Works was situated. This belongs to the well-known industrialist D. D. Puri, and is capable of supplying complete sugar plants. Another engineering works at Jagad-

hari was K-Engineering Works and were able to supply equally good machinery at cheaper rates.

It may also be mentioned here that Saharanpur is one of the most industrialised districts in U.P. after Kanpur. It has a sugar factory, a textile mill, the biggest cigarette factory in Asia, a paper mill, a distillery, and at least 200 workshops big and small. The wood carving industry is sizable and employs at least 20,000 Muslim families in the carving industry. The carvings are comparable to the walnut wood carvings of Srinagar, but here sisam wood is used instead. Saharanpur has also the reputation of having a number of big and small contractors who take up contract work in sugar and other factories all over the country and execute satisfactory and cheap work in erection and fabrication of machinery. They are also very handy to get extra work done in a factory without increasing the strength of factory paid workers, who in turn may create other labour problems.

The threat of nationalisation has been hanging like the sword of Democles on the head of the sugar industry in India in general, and in U.P. in particular, for the last few years. I was still in Saharanpur when this became vocal. Whenever myself or the chief engineer asked for store materials even for the ordinary necessary repairs in the factory — leave aside the replacement or any major changes — the usual answer was in the negative, and we were asked to anyhow pull on with essential minimum repair and patch work for which gas and iron sheets were sanctioned.

I do not blame the mill-owners. Perhaps if there were a project which belonged to me, and was likely to be snatched away from me in the near future, I would adopt the same narrow policy. It is like the cow which is milked dry before parting away with it. The store materials and in fact every thing possible was being denuded in preparation of the take over by the Government, the intention being to hand over scrap to the Government.

In the wider national interest of production or the health of any industry, it is vitally necessary that clear-cut and unambiguous policy of nationalisation should be laid down and widely circulated without any reservations, so that the indus-

trialists know where they stand and how they should draw their future programmes for the running of their industries. Whimsical nationalisation here and there is extremely detrimental in every respect, as nobody can have the necessary enthusiasm to invest, plan and expand his industry. Further if any industry is to be nationalised, it should not hang fire for any length of time, but done immediately and expeditiously so that no time is allowed to suck the industry dry before handing over to the Government, as has happened in some cases.

After putting in five years of hard and honest work at the Lord Krishna Sugar Mills, Saharanpur, I was fed up with the unhelpful attitude of the mill-owners, the out-of-control condition of labour, and the poor maintenance of machinery. The physical and mental strain was even more than the year 1938 in which I assumed the responsibility of Chief Technologist of Harinagar Sugar Mills for the first time, when I was only 28 years old. The duties of supervision vastly escalated, because there was less and less respect for the instructions given, and more and more disregard to carry them out faithfully. Disciplinary action against the defaulting workers became almost impossible due to the dominance of labour unions and the impotence of the management. In West Bengal the conditions deteriorated to such an extent that Gheraos and violence against the senior officers became everyday incidents, and were widely reported in newspapers. Many industries declared lock-outs and others closed down altogether indefinitely.

With the threat of nationalisation, the already 30-35 years old machinery of sugar factories was further neglected, so much so that the life of the technical officers was rendered miserable and unenviable. Under these various uncongenial circumstances the stresses and strains of day to day working had effect on my health, which had been radiant throughout my sugar career so far. I decided that it was now time for me to quit the sugar industry to recoup my health, and spend the evening of my life in peace, happiness and tranquillity of mind.

So I resigned my last sugar job in Saharanpur, and finally retired from the Indian Sugar industry, which I had the privilege to serve for nearly four decades, in August 1970. My

only son Dr. Atul Narain, a reputed surgeon, was already well established in Calcutta, and I and my wife came to live with him in September 1970. It is strange that after having spent the whole working active life in small places, I was destined to live in the biggest city of India after retirement.

INDIAN SUGAR INDUSTRY: A REVIEW

Sugar is the second largest Industry in India, the first being the Textile Industry. There was hardly any sugar industry in our country worth the name prior to the year 1932, when sizable protective duty was imposed on all imported sugar. After which, it redounds to the credit of private enterprise, that sugar factories sprang up like mushrooms mainly in U.P. and Bihar. These two States — more U. P. than Bihar — had been the mainstay of Gur production in India. It is not without interest that although sugarcane is a tropical plant, the Indian sugar industry developed in these sub-tropical regions, because hardy indigenous canes were already growing there. It is said that the first sugarcane in this universe was stolen from Heaven, where it was called Honey-Reed due to the sweetness of its stem, and planted in India for its multiplication by vegetative propagation. From India it proliferated and encompassed the whole world.

India is the biggest producer of sweetness in the world including Sugar and Gur. Area under sugarcane nearly 7 million acres is the largest in the world, but because the sugar industry here is largely confined to the sub-tropics the yield and the quality of cane are poor. The yields of sugarcane in U.P. and Bihar are 15.8 tonnes and 12.7 tonnes respectively, as against 25.6 tonnes in Maharashtra, 32.8 tonnes in Tamil Nadu, 36.1 tonnes in Andhra and 33.3 tonnes in Mysore. A sugar recovery of 9.5 per cent if obtained for the whole season, is considered satisfactory in U.P. and Bihar, while a recovery of 11.5 per cent and above is easily obtained in Maharashtra. A few factories there record a recovery of 12.5 per cent and

over as an average for a six month's season. As a result of these high recoveries sugar industry has shifted more and more to the Deccan from its original home in the North. For many years U.P. produced 50 per cent of all sugar produced in India, but during the last few years the centre of production has shifted to the South, and at present Maharashtra is responsible for producing 33 per cent of sugar in their region. The climate in Deccan is more suitable for sugarcane being warm and equitable, and as such noble canes with higher yield per acre and more sugar per cent cane, can grow there. This gives the sugar industry in the Deccan an edge over the sugar industry in the northern regions.

The phenomenal growth of the sugar industry can be gauged from the number of sugar factories and the rapidity with which they sprung up. From only a few factories before the protective duty, there were already 134 sugar factories by 1934, and the sugar production shot up to 12.42 lakh tonnes by 1939-40 when it was only 2,95,000 tonnes a few years back. The second world war created unsettled conditions, and the production fell down to 7.9 lakh tonnes during 1941-42. In 1951-52 sugar production reached a figure of 15.2 lakh tonnes. The fluctuations in sugar production are likely to take place to a certain extent because this industry is agro-based, and so the ups and downs in sugarcane production, depending upon the climatic conditions from year to year, are bound to affect the levels of sugar production from season to season. It will be interesting to know that only about 30-33 per cent of all the sugarcane grown is routed to the sugar factories, and the rest is used for seed, chewing and Gur manufacture. It will thus be seen that as far as sugar production is concerned, it is but a question of diverting sugarcane from Gur to sugar manufacture by making it more profitable to the grower to deliver his cane to the sugar factories rather than to the Gur manufacturer?

I do agree that the Central Government has so far failed to organise and regulate the second biggest industry on a long term basis. The Government policies have all along been in the form of 'palliatives' based on 'ad hocism', which has definitely proved to be detrimental to the best interests of the

sugar industry and sugar production. The Central Government during all these years imposed controls, decontrols, and now partial control since 1967-68. The measures taken included raising of the minimum cane price from Rs. 5.68 to Rs. 7.37 per quintal (linked to 9.4 per cent recovery or less), reduction in the basic excise duty on sugar by 8.35 rupees per quintal, and acquisition by the Government of 60 per cent of factory output as levy, leaving the rest with sugar factory for sale in the open or in the black market as it has come to be called.¹⁴ Some people go to the extent of alleging that this policy of partial decontrol has enabled the sugar magnates to rob the general public to the tune of Rs. 200 crores in a single year through the dubious scheme of "Open Market", and pay handsome subscriptions to the coffers of the ruling party. But it is true that this policy helped the sugar factories to pay a higher price for cane, and thus assisted in diverting more sugarcane to factories for crushing and augmenting sugar production. At the same time the sugarcane growers also received more money for their produce. The sugar production went up to 42.66 lakh tonnes in 1969-70. Sugar production again declined to 37.40 lakh tonnes during 1970-71 and to 31.12 during 1971-72. The consumption of sugar, in the meantime increased to 40 lakh tonnes, thus causing a shortfall of about 9 lakh tonnes. With certain incentives as rebate in excise duty over the production of the last season etc., the production of sugar is expected to be approximately 38.6 lakh tonnes during the season 1972-73.

So the curve of sugar production has gone up and come down, but failed to stabilise even after 40 years' life of the Indian sugar industry. Further to add to the woes of the consumer the open market price of Rs. 4/- per kilogram is the highest in the world. Who is responsible for this state of affairs is a moot question. The Government's indifferent policy, the greed of the producer, and the distributor who hoards, manipulates and jacks up the prices, are all responsible for fleecing the poor consumer.

India is the only country in the whole world where cane is still being paid on the basis of weight, and not on the basis of quality. The cultivator who is the bulk supplier of sugar-

cane to the factories is naturally interested in the tonnage of his cane per acre, while the factory who is the miller, is interested in the better quality of cane which will give him higher recovery of sugar and thus bring down the cost of his sugar production, and boost up his profits. As for example a rise in recovery of 0.1 per cent cane can on rough calculation yield an additional profit of Rs. one lakh to a sugar factory crushing from 1000-1200 tonnes of cane per day in a season of 5 months. In this way there is a clash of interests between the grower and the miller, and militates against the propagation of cane varieties with higher sucrose content, whose tonnage per acre is generally poorer.

The dominant reason why the payment of cane on the basis of quality has so far not been possible in India, in spite of large scale experiments instituted by the National Sugar Institute, Kanpur for a number of years, is the unmanageably large number of growers supplying cane to a single sugar factory. About 21 lakh growers spread over 40,000 villages supply cane to 71 sugar factories in U.P. This would mean that a sugar factory of nearly 1000 tonnes crushing capacity of cane per day is supplied on an average by 40,000 to 50,000 sugarcane-growers. At the Ratna Sugar Mills Co. Ltd., Shahganj, 55,000 growers at the gate and the outstations, were supplying cane to a 900 tonnes sugar factory. Fifty per cent of these growers were so small as to supply only one or two carts of cane weighing 6 quintals each, during the entire crushing season. In view of this no method could be evolved to test the quality of cane supplied by each grower, and make payment to them individually on quality basis. As against this I saw in Australia in 1950, that their 36 sugar factories, producing 12 lakh tonnes of sugar, were receiving cane only from 8,000 cultivators. It was quite feasible, therefore, to analyse the sugarcane supplied by each grower and pay him according to the quality known as C.C.S.

In quite a few sugar producing countries of the world the pattern is that the miller is also the cane grower, which he can do on a large scale, employing all the latest scientific methods of agriculture with the aid of tractors and other mechanical devices available to him. In India with a socialist democracy

it is incumbent upon the Government to diversify, as much as possible, the gains of production, and distribute them to the widest section of the society. With this aim in view even the cane farms attached to the sugar factories some of which were doing multiplication of the promising cane varieties, and operating model demonstration farms for the guidance of the cultivators with limited means, were also included in the Ceiling of Landholdings under the pressure of public opinion for better or for worse. As such the cultivation of sugarcane will remain in the hands of millions of growers and the payment on quality basis, which is essential for increasing the recoveries of sugar in order to make sugar cheaper, will remain a far cry, and will thus always be a minus point in the growth of the Indian sugar industry.

The prosperity of the sugar industry is directly based on cane development as the price of raw material accounts for more than 67 per cent of the cost of sugar. But, unfortunately cane development at present has become nobody's business. In U.P. and Bihar cane cess was levied on the cane crushed for many years. Other states have followed suit. In U.P. it is of the order of 50 paise per quintal of cane crushed by the factories, which is said to be earmarked exclusively for cane development by the state Governments, but quite a large percentage is diverted towards the general revenue. Under the circumstances the factories argue that when they have already been taxed for the development of cane, it is none of their business to take interest and spend further sums of money or that account. And it cannot be said that they are entirely wrong. During the 40 years of the Indian sugar industry, the yield per acre and the percentage of recovery have remained static or even gone down.

Following the same pattern of Ceiling on Landholdings, the State Government in Maharashtra, has taken over 84,000 acres of sugarcane farms belonging to nine companies under the Maharashtra Agricultural Lands (Ceiling on Holdings) Act of 1961, and thus the Farming Corporation has become the biggest single holder of agricultural land in the country. The Corporation is acting as a middleman between the factories and the agricultural labour so far directly employed by the

factories. Till 1966-67 the Corporation supplied cane to the sugar factories at the price notified by the Government. But after partial decontrol a dispute has arisen between the Corporation and the factories on the question of price of cane at which the Corporation will supply cane which has become a matter of litigation. The litigation started in the High Court of Bombay and is pending in the Supreme Court at New Delhi.

In the meantime the State Legislature has passed a bill saying that from the year 1973-74 and thereafter, there is no obligation on the State Government or the Farming Corporation to supply cane to the Joint Stock Companies from the surplus lands taken over from them, and the price of cane at which they will sell their produce is to be fixed by the Corporation. Wherefrom the sugar factories will get cane in future is a big question mark.

Again in U.P. and Bihar the practice is that the Cane Commissioner of the State, reserves the areas for every factory from where they can draw their cane supplies. To me this practice has no rationale, but is being continued to keep the Cane Commissioner seated on a high pedestal from which he distributes cane. The cane reservation meeting presided over by the Cane Commissioner is an important annual ritual, and the sugar factories prepare their claims and counter claims much in advance of the actual meeting. It is to me an entirely futile exercise and waste of valuable time of the Government officers, the factories, and the growers. Why the reservation of cane areas could not be done on a long term or even on a permanent basis passes comprehension. Making a similar recommendation, the Gundu Rao Committee (1965) on Rehabilitation and Modernisation of the Sugar Factories wrote:

It is essential to clarify and define and reserve the factory zones on a long term or a permanent basis, depending upon the capacities of factories. The sugarcane growers should be educated to align their interests with those of the factory, and the factory in turn should see to it that the interests of the growers are not allowed to suffer. Direct contact should be established between the two as much as possible.

The Tariff Commission (1969) also made an emphatic recommendation in this respect. It said:

The ideal solution to the problem would be to provide for an area of about 60 Sq. Kilometres for 1000 tonnes of crushing capacity around each factory which the factory should scrupulously nurse and develop.

It is true that most of the sugar mill owners are not in the sugar-making business, but in the money making business, and so adopt every means, whether honest or dubious, to make as much money as possible in the quickest time possible. By and large, the national or social outlook is lacking and is the dominant cause of much friction between the labour and the management. The management also in many factories is far from satisfactory as the management is not organised on industrial lines, but on the shop-keeper lines. An investigation carried out by a team of experts on the causes of the close-down of hundreds of factories and industries in West Bengal, revealed that 42 per cent of the companies had closed down due to bad management. Other less important causes were financial insufficiency, non-availability of raw materials and labour trouble.

It is a great pity that Management is not considered in India as a special branch or art or science which requires specialised training and teaching, but is either considered the privilege of the 'Blue Blood' or the I.A.S. in large Public Undertakings. It is heartening to find that the importance of Professional Management is being realised by both the Government and the private industrialists. It is understood that the Central Government has almost decided to set up a special cadre for Managers and Managing Directors for the management of huge Public Sector enterprises. As far as sugar factories are concerned, I have mentioned that the best managed factories are those which have a good team of a Manager, Chief Engineer and Chief Chemist or Technologist, vested with necessary confidence and powers.

The labour on the other hand has become impatient, restive, and much more conscious of their rights than their duties. I have before me the whole panorama from 1933 to 1970 which

passes like a film on the cinema screen, how the labour with increasing wages does less work, and has become very indisciplined. The cleverest worker is he who gets his salary without doing any work or the least work. I have been informed that in the Calcutta Corporation, there are quite a few persons who do nothing the whole month, but present themselves on the pay day to collect their salaries.

Between the mill-owners and the labour there is a remarkable growth in the tendency of mutual exploitation. The capitalist is desirous to give the least, and take maximum of work, while the worker is all the time on the lookout how to avoid work and get his wages. It is a sad commentary on the mentality of the capitalists that they will part with nothing with grace, but will give only under compelling circumstances when the money is extracted out of their pockets. They have also failed to realise that the health of the worker is an asset to the company and less absenteeism to foster better and more efficient production. The health of the employees extends to the health of the company, and to make the enterprise as a whole healthy. W.H.O. expert committee has recommended that 'Occupational health' should aim at the promotion and maintenance of highest degree of physical, mental and social well-being of workers in all occupations. Protection of workers in employment from risks resulting from factors adverse to health, and to assure adaptation of work to man, and each man to his job. The programme of industrial medicine is based on the concept that giving treatment when employees are ill covers only a part of the job. It will be necessary for the industry to prevent diseases, and to go a step further to promote health, and to make the working environment safe and healthy.

The employees should be given full scope for deep involvement and commitment in the company's affairs. And it will not come by accident but by a planned execution of a corporate philosophy. Maximum job satisfaction means maximum efficiency. Speaking of job satisfaction western writers have defined worker's participation as being "active pursuit of a goal which involves the ego". The concept refers to a feeling of ego-involvement in a task, so that a person can be said to be

participating in a job only if he feels that he is a member of a group. What a pity that practically no organisation in this country seems to be fully aware of the importance of changing their orientation regarding workers participation in industry. Each person should be allowed to make full use of his talent so that it can result in his promotion from the shop floor to the management desk. Attention should also be given to community welfare with good residential quarters for workers and their families, school, hospital, co-operative store, club, stadium and playgrounds. If the workers are happy and healthy, the industry is bound to be happy and healthy.

The senior technical officers come in between the employers and the workers. Their predicament is unenviable as they are being ground in between. These people are temporary in the sense that they can be asked by the mill-owner to pack off and leave the concern by paying them one, two or three month's salary as per the terms of appointment, and thus leave them to their fate. They have no protection and no appeal lies anywhere. Such technical officers are expected to run the Indian sugar industry at the highest efficiency, and comparison is made with the best working results obtained in other sugar producing countries of the world.

My experience has been that stability of service is a necessary desideratum for improved working, and also to uphold social justice. But it is a contradiction in terms to say that over-security of service is a contributory factor to inefficiency. What Tulsidas said in Ramayana that "there could be no love without fear", is also true to the core. This is true both of labour in industry and the servants in the Government, whose service is quite secure and the promotions take place on seniority, which has been sought to be broken in the case of the appointment of the Chief Justice of India and has generated so much heat and controversy. But Prime Minister Indira Gandhi said, "Seniority is neither a law of nature nor of reason", and it certainly was not the best guide in any branch of life. This is a new departure in the old policy, as promotion on the basis of the seniority alone, muffles initiative, and turns horses into asses. I think a new break has been made and this may encourage and stimulate young officers to put in extra good work and labour.

to deserve promotions. It is possible that in this manner the Government's lethargy and delays of red-tapism may be eliminated to some extent.

The co-operative movement in the sugar industry started with the establishment of the first co-operative sugar factory known as Pravara Co-operative Sugar Factory at Loni in Maharashtra. In those days the Government's scheme was that wherever the growers will collect Rs. 10 lakhs amongst themselves, the Government financial corporations will provide rest of the finances to establish a co-operative factory. Who can raise a finger against the co-operative movement? Only it should not become corrupt. With the phenomenal success of Pravara, more and more co-operative sugar factories came to be established in Maharashtra and then in other parts of the country including U.P., Punjab and Bihar. The co-operatives have tremendously assisted escalating the prosperity of the countryside.

But it is also an unfortunate off-shoot that the management of the co-operative factories is riddled with party politics, and the working staff feels insecure due to the change in the board of directors from year to year, who are exploiting the factory for their own selfish ends till the sun shines. I saw even in Australia that the technical people preferred to work in proprietary companies in preference to the co-operative factories. On enquiry they informed me that the management of the co-operative factories left much to be desired due to the discontinuity of management policies with the change of directors, the same as in India. A Manager friend of mine who was Managing Director in a co-operative factory changed over to a private sector factory and felt much happier. I draw the attention of those who are responsible for the co-operative movement to pay requisite attention to this aspect and I feel sure that something can be done to improve the situation.

With the rise in population and the standard of living the consumption of sugar is also going up. In India it used to be of the order of 3.4 lbs. per capita, but is now 8.9 lbs. and is bound to rise further with prosperity and the tea drinking habit. Although our sugar consumption is still insignificant in comparison with 125 lbs. of Australia and 100 lbs. of several

other western countries, still if the consumption of Gur and sugar is integrated together it is about 30 lbs., and has an ascending curve. Attempts are being made towards the production of 60 lakh tonnes of sugar at the end of the fifth five year plan in 1979. As such the future of the sugar industry in India is assured and bright.

Indian sugar industry is of such vast magnitude that it employs 2 lakh workers, 20,000 educated persons and millions of sugarcane cultivators. Cane is a cashcrop, besides is so hardy that when due to adverse climatic factors such as drought or floods, other crops fail totally, sugarcane is only partly affected, and still fetches the cultivator some returns. There is tremendous indirect employment also such as for miscellaneous store suppliers, the suppliers of bulk materials like sulphur, lime and gunny bags besides giving work to bullock cart and truck operators for the transport of cane and sugar. What prosperity pivots around an industry can be seen by the development of small self contained townships in the vicinity of sugar factories where there was not a single hut when the factory started functioning.

I have never understood nor appreciated attempts at the supplementation of cane sugar by beet sugar in India. I do not think that all aspects and avenues for the proliferation of cane sugar production have been exhausted. Beet is an exotic plant suited to cold countries, and its seed production and acclimatisation is not going to be an easy matter, when sugarcane belongs to India since times immemorial, and already much is known regarding its successful cultivation, which has only to be enforced. It is like purchasing another cow to boost the milk supply when the first cow is not being properly looked after to exploit its maximum milk supply. With 7 million acres of sugarcane area in India, with a little more attention or better cultivation methods, evolution of high yielding cane varieties and irrigation, more than sufficient cane can be grown to cater to the needs of both Gur and sugar production for our needs.

Besides the extraction of juice from beet follows a different process of diffusion, and not milling as in the case of cane. The diffusion plant alone for a 1000-1200 tonne factory will cost

at least Rs. 50 lacs or more. Further as bagasse fuel will not be available as with cane, arrangement for providing and burning extra fuel for the generation of steam for the prime movers and for processing has to be considered. I saw in America that every beet sugar factory had a wranching or cattle farm attached to the factory for the disposal of exhausted beet pulp to serve as a fattening feed for the cattle to provide meat. As the beet juice does not contain any invert sugars the final molasses purity is approximately 55°, which represents a very big source of loss. In order to recover further sugar from these rich molasses, every beet factory shall have to be provided with what is called a Steffen's house for the recovery of additional sugar without which the industry will become uneconomic. I am therefore, of definite opinion that we should not rush after beet without first exploiting all possibilities of the escalation of sugar production from cane.

I am here tempted to make certain points in regard to the Indian sugar industry which if given attention to, can improve the efficiency of sugar production, and positively bring down its price much to the relief of the common consumer who is being crushed from all sides.

Cane Development: More attention must be given to the cultivation of high-yielding and rich cane varieties. As far as the breeding work is being done at Coimbatore, it is satisfactory. Already quite enough is known about cane cultivation methods, the only problem is of its correct implementation. After the imposition of cess on sugarcane crushed by the factories, most of the factories have relegated the cane development work to the State Governments which is being carried on as in other Government departments.

Maturity-Wise Harvesting: In order to get the highest recovery of sugar from the standing cane in the field it is absolutely necessary that the harvesting should be done according to the degree of maturity in the different fields. Different cane varieties ripen at different periods, and even the same variety of cane will be at different stages of maturity depending upon the time of plantation and the soil type. Quite an exhaustive experimentation has been carried out by the National Sugar Institute, Kanpur, and I have myself very encouraging

experience of this practice at Saharanpur. It is estimated that a boost of 0.5 per cent in recovery is quite feasible which is a tremendous lot. The whole scheme can be implemented without any difficulty with the co-operation of the Cane Development Staff working under the Cane Commissioner in U.P. The seasonal chemists and analysts called a month or so in advance of the season can do all the survey work by means of hand refractometers to determine the average brix of the various cane fields, after which the harvesting schedule is made out. This is very useful in the beginning of the season, and may be relaxed when all the canes have reached maturity.

Transport and Roads: In order to get the highest recovery it is a necessary condition that the time lapse from the harvested cane in the field to the sugar in the bag should be the minimum possible. The first step is to get the cane quickly transported to the factory and fed into the cane carrier for crushing. Cane is a very perishable raw material, as it rapidly deteriorates with the passage of time, converting sucrose into invert sugars which are non-crystallisable, and pass out in the final molasses. Not only this, the inverted cane presents difficulties in clarification and crystallisation by yielding recalcitrant juices hard to process. Good roads in the factory area are a great pressing necessity, and more attention to this aspect is urgently called for.

Milling Plants: There are still many milling plants in India having from 12 to 15 rollers which are quite insufficient to extract adequate quantities of sugar and juice from sugarcane. Particularly in the north, where the canes are hard and the fibre per cent high, an 18 roller milling plant is absolutely necessary. I have seen that even in Maharashtra where the canes are comparatively soft and have low percentage of fibre, the best milling efficiency is obtained by those factories having 17-18 roller tandems. Besides the additional recovery of sugar another benefit that accrues with such a tandem is the lower moisture content of bagasse which increases the calorific value of the fuel. The sucrose per cent bagasse which is near about 3.5 per cent and over in 12-15 roller milling plants, can be safely reduced to 2.7-2.8 per cent which means an increase of at least 2 per cent in sugar recovery.

The Loss in Molasses: After the loss in bagasse the biggest loss of sugar occurs in the final molasses. I have experienced that this loss is generally high not so much due to the deficiency in the working of the manufacturing department, but to the inadequacy of proper equipment which does not allow to desachharify the sugar from the molasses. Good and uniform establishment of grains, proper boiling and after treatment in the crystallisers, are all important in their own turns. Many times the good work done in the pans and crystallisers is undone in conveying the cooled and stiff massecuite to the centrifugals in which the poor technologist is helpless. With good working and adequate equipment the loss in molasses can be reduced and the sugar recovery pushed up by about 0.1 per cent cane.

Now if all the increased recoveries due the lower losses are added together, it comes to a substantial figure of 0.8 per cent cane. This represents a huge gain in the production of sugar, and can assist in bringing down the cost of production to a considerable degree.

I am quite sure that the technologists and engineers available in India are no inferior to any in the whole world, but in fact are superior as far as the theoretical knowledge is concerned. Our only drawback is the fear of soiling our clothes and dirtying our hands. We are fond of supervising and doing nothing with our hands. When I started my sugar career and was a mere apprentice chemist, what Altman, the Dutch sugar technologist told me then, "You dress too nicely for a factory", I never forgot in my life and it paid me rich dividends throughout my sugar career.

Recently Japan Government asked the Government of India to send to Japan 20 brilliant young agriculturists whom they were desirous to train in the latest agricultural practices developed in their country. The Government advertised for 20 topmost agricultural graduates, and made stringent selection, after which they were sent to Japan. The Japan Government to begin with, sent them to fields in the countryside for doing manual work. The Indian gentlemen graduates objected to this lowly treatment. There was correspondence between the Government of Japan and the Government of India on the be-

haviour of Indian students. The net result was that they were sent back after being declared as unsuitable for practical training in agriculture.

The intelligence of Indian students is appreciated all over the world, and I have personal experience of the same. Professors of the University of New York and California told me that according to their experience Indian students have proved the most intelligent of all the international students in their universities. It is no mean tribute and I was extremely elated to hear all this. What the Indian youth requires is to realise more and more the dignity of labour and to shed his Babuism. I am reminded of a story which I heard at the Lucknow railway station some years back. A Nawab got down from the train, called for a coolie and handed over to him his walking stick to carry. Another gentleman who got down from the same compartment saw this tamasha and was completely flabbergasted. He called another coolie, and handed over to him his ticket to carry in order to humiliate and beat the Nawab. This I call Babuisin in India. We must relinquish all this false sense of respect, be prepared to do work with our own hands and not be shy or afraid to soil our clothes and hands. I am sure with this transformation in our character and behaviour, we are capable enough to beat anybody in the world.

The axe of nationalisation has been hanging over the neck of the Indian sugar industry for the last few years. It is definitely in nobody's interest. Either nationalise quickly without any breather, or declare in unambiguous terms that this industry shall not be nationalised and keep the promise. Recently I was at the Harinagar Sugar Mills, Champaran, Bihar, where the Managing Director made out a bold expansion and reorganisation scheme for the mills costing about a crore of rupees. I was rather astonished at his boldness, because I had been seeing that almost no sugar factory was thinking in those terms, but marking time and endeavouring to suck the cow dry before the sword falls. The final orders for the machinery were pending and waiting for the report of the Sugar Enquiry Commission. Thus nothing is moving and procrastination rules the industry.

The Sugar Industry Enquiry Commission was set up in 1968-69, the terms of reference of which were:

1. Whether nationalisation was desirable?
2. Whether sick mills alone were to be taken over?
3. How sick units were to be defined and listed?
4. Whether Co-operativisation was the best solution?
5. In the event of non-nationalisation being decided, how the broader social objectives could be realised?

The Commission is rumoured to be sharply divided on the question of nationalisation. While some members of Parliament are understood to favour nationalisation, the other members drawn from the industry, labour and technology are very sceptical about the efficacy of this step specially in an essential consumer industry. Quite a few have favoured the take-over of sick units alone, and a sick mill is one which is technically sick i.e. whose Reduced Overall Recovery (ROR) is less than 85 per cent and the total loss is more than 2.5 per cent, consisting of bagasse, mud, molasses and undetermined losses. Judged from this criterion most of the mills in U.P. are sick. There may be managerial and financial sickness as exhibited by lack of proper repair, maintenance and non-payment of cane-growers and Government dues, or lack of proper technical personnel. Grave financial and managerial sickness is said to be favoured as a ground for the take-over. But the Government is believed to be lukewarm about taking over the sick mills alone for obvious reasons.

There is considerable difficulty in laying down all-India standards due to widely varying quality of cane crop being in the north and the south, due to the varying climatic conditions of rainfall and temperature, as also soil types. However, there is consensus that the question of nationalisation should not be kept hanging on the neck of the industry like the sword of Democles, as it is good for none, but something positive has to be done to resuscitate the industry, to ensure its growth, to give the cane-grower his proper dues, to strip the politicians of a hardy weapon for agitation, and to provide sugar to the consumer at a reasonable price, not at the highest price in the world.

It is interesting that whomsoever you meet in the sugar business, whether the grower, the manufacturer, the wholesaler, the retailer or the consumer, everybody blames the Central Government for the ills of the industry. Sugar is the most controlled commodity in India at all stages — from the price of cane to the price of sugar including its monthly releases to the market, but there has been no long term plan. V. Shankar, former Secretary to the Ministry of Food and Agriculture some time back said, "The sugar problems are of such a nature that any loss of time merely adds to the problem and does not diminish it. It has always been the case that they have thought of the immediate problems, and tried to solve them in a snap manner. Thereby they have created a ramshackle course of industry the effects of which are too plain to be seen by anybody."

It is in one way good that the sugar policy for the season 1973-74 was announced well in advance of the next crushing season. It is the same as was in force during the season which has just gone by. The price of sugarcane will be Rs. 8/- per quintal linked to a recovery of 8.5 per cent. Partial control by which 70 per cent of the sugar production will be taken as levy and the rest 30 per cent will be left free with the factories to sell in the open market. The cane crop is said to be satisfactory and a sugar production of 43-45 lakh tonnes is estimated for the impending season. There will be a carry over of two lakh tonnes of sugar more than during the last year, and let us hope sugar will be available to the consumer at a reasonable price, thus taking out the bitterness from a sweet commodity.

14

HINTS FOR BUDDING SUGAR TECHNOLOGISTS

A successful man is always asked, "What is the secret of your success?"

People never ask a man who is a failure "What is the secret of your failure?" It is quite easy to see that they are not interested.

Success has a price, the more you pay, the richer it makes you, and the harder you work, the happier you become.

Nothing can be achieved without hard work. There is no substitute for it.

The definition of genius has undergone a complete change now. Genius who used to have 90 per cent inspiration, and 10 per cent perspiration is no more. Now the genius is 10 per cent inspiration and 90 per cent perspiration. The constant rubbing of a rope wears out the stone.

Germany wanted to train some young Indian engineers, and so a dozen brilliant graduate engineers were sent there. For six months continuously these graduates were directed to work as shop assistants doing the meanest jobs such as sweeping and cleaning the machines. Six apprentices could not stand it and had to be called back, the rest stayed behind, weathered all the hard and laborious training and became first class engineers. It will be clear now why German engineers have made a name throughout the world.

Let it not happen to you that when you have to work with your own hands and put in industrious work, you are wanting. I have found that it is a good practice to have entirely separate clothes for the factory, so that you are not inclined to

save them when there is work to do. This applies even more to the young engineers who aim at attaining success and high positions in the long run.

The Sugar Technologist should have a working knowledge of sugar engineering also, so that the technologist and the engineer can understand each other more intelligently, and appreciate the mutual difficulties in the working of the factory. I have often seen that sometimes the problem is not understood either by the technologist or the engineer and there are unnecessary bickerings and mutual fault finding without any purpose. This is a very suicidal policy and should never be resorted to. In such cases both the technical heads come to grief. It is advisable to consult some outside agency preferably the National Sugar Institute, and solve the problem in the best interest of the factory, the chief engineer and the chief technologist.

Learn to co-operate and win co-operation. The chief technologist and the chief engineer are the two vital horses harnessed to the factory's carriage, and they must trot on together if the carriage is to run a smooth course. If they pull in opposite directions the carriage is destined to fall in a ditch. It is with much regret that I cite the example of one of India's most brilliant sugar technologists, Mr. Iyer. When I visited Hawaii, he was very highly spoken of there by the Americans, and it was a matter of pride for me to hear his praise. But he could not pull on with anybody. He quarrelled with the labour, the chief engineer and the mill-owner. As a result of this unco-operative attitude, in his later years he failed wherever he worked, and met his death under impecunious conditions. I remember that the Sugar Technologists' Association of India collected subscription from its members to finance the education of his children.

At present labour needs very tactful handling, because their position as regards stability of service is much more sound than yours. The technical officers these days do not know how long they are going to stay and work in a certain factory, and this is one of the greatest handicaps with which they are faced. But my strong advice is that he should not allow this uncertainty to mar his working efficiency, and he should go on

working till he quits with the same zeal and sincerity as if he is going to stay forever. I know that it is difficult to do so, but as the saying goes "Do good to others and then throw it into the well"; in the same way you should do your very best and throw the consequences into the well. There is no other way.

Do not expect admiration or appreciation, because the mill-owners are working under a false impression that if they heap praise on the officer, the latter will either cease to work or ask for a rise in his salary. Nothing could be farther from the truth, because the psychologists have realised that the greatest incentive to work is approbation and not discouragement. But face facts, work hard and ignore discouragement if you wish to ride the ladder of success which tries to elude you at every step.

Explain the 'Why' of the orders and the instructions given to your junior staff and the labour. They will follow them more intelligently and faithfully, because their minds will be with their work. And after all you are not infallible. Your instructions may not be 100 per cent correct always. Thomas Edison achieved the unique distinction of being the greatest inventor of all time when he was correct only 70 per cent of the times. What about you and me?

Keep a diary or a note book always handy in your pocket. Note down instructions or orders from your superiors when given. I was advised by Raja Narayanlalji of Harinagar to keep a note book always at hand, and I can say that it never happened in my long sugar career that I had to say, "Sir, I forgot". This increases your efficiency. Further you should note down during the working season any difficulties encountered, and your suggestions for solving them. If you wait till the end of the season many points will be forgotten and you will remember them only when they recur during the next season when it is already too late.

After these general remarks let me now come to the actual factory working.

Cane: Foremost attention should be given to the supply of fresh, good quality cane, correctly weighed, and fed into the cane carrier in the least possible time after harvesting from

the field. This is the most important single factor which will yield high quality juice easy to clarify, easy to boil and easy to cure. Cane is a highly perishable raw material, and stale cane juice is recalcitrant at every station in the boiling house, creating lot of headache to the technologist. The tendency of the mill-owners is that when the recovery is high, it is due to cane, and when it is low, it is due to bad working and higher losses.

Maturity-Wise Harvesting: Harvesting the cane according to the degree of ripeness is the purpose of maturity harvesting. As already explained elsewhere, this is a method which can make the highest recovery from the cane standing in the field. The technologist will be amply repaid for all the labour incurred in making this scheme successful. The recovery can escalate upto 0.5 per cent cane if the brix survey is correctly done and the cane supplied accordingly. I have practical experience of this scheme and can safely recommend it for adoption. In every case the gain in recovery will always be more than the money spent in carrying out the maturity-wise harvesting scheme.

Feeding: In most of the sugar factories feeding of cane into the cane carrier is nobody's business, and as such it is most perfunctorily carried out. At many places it is under the general management, and any complaint against it is considered to be a reflection on the Manager.

Milling starts from the cane carrier and if the cane carrier is not uniformly fed, the mills which are set to deal effectively with a certain thickness of the cane or bagasse blanket, cannot press it properly and inefficient juice extraction is the result. Many times during low feed the mill chokes, full or partly crushed canes pass on to the boilers, still full of valuable juice which is burnt in the furnaces after first extinguishing the burning fire due to its very high moisture and juice content. I have experienced time and again, that when there was bad feeding — meaning low feeding and chokes, the recovery went down with the cane quality remaining the same. This loss is recorded nowhere and is unknown. It is not even accounted for in the undetermined loss, and may be termed avoidable loss.

Milling: All assistance should be extended to the chief engi-

neer in gauging the correct mill setting, and the mill working in order to obtain the highest milling efficiency or the extraction of as much sugar as possible from the cane crushed. The brix curves of feed and discharge juices of all the mills, and also the moisture and sucrose content of the different bagasses emerging from the mills can afford a valuable guide. The moisture in bagasse is also important as the calorific value is inversely proportional to the moisture content of bagasse. Apart from the low calorific value of moist bagasse, there is considerable trouble for the boiler attendants to maintain the requisite boiler pressure when the fuel is wet.

Boiling House: The weight of mixed juice should be accurately and correctly determined as it is the starting point of all chemical control in the boiling house, which is under the direct control of the technologist.

Continuous clarification has given definitely superior results in a sulphitation factory and should be adopted as far as possible. This process saves the consumption of lime and sulphur, and forms better floc for sedimentation and filtration.

Many factories have felt the bottleneck at the evaporation station, but considerable improvement in the boiling performance can be achieved by giving attention to the following points:

1. Both sides of the tubes should be properly clean. This should be supervised by the chief technologist himself, as quite frequently he is given incorrect reports and is at sea in case of difficulties of low evaporation. The best method to clean the outside every few years is to take out all the tubes, scrub them completely outside and then fix them again. There is nothing to fear as the damage to the tubes is nominal if correctly done, and the surity of cleaning is positive.

2. Make sure that there is no short circuiting of juice in any body. The juice should spread nicely over the whole heating surface, and get full advantage of the heating surface supplied. This can be practically seen by applying one's face closely to the sight glass and see the inside and the juice distribution.

The removal of the condensate should be quick and complete. Non-hammering is no sure sign of good condensate removal. Sometimes a few inches of the bottom side of the tubes

are always immersed in the condensate and reduce so much the capacity of that vessel.

4. Distribution of steam and vapour should be equitable and uniform in the calandria. Higher evaporation rates have been achieved by making double or triple entries of vapours in large bodies, divided equally in the whole circumference of the body.

Entrainment: Entrainment is a great nuisance in many evaporators, either from the intermediate bodies or from the last body. Sometimes it is due to faulty working but mostly it is due to high velocity of vapours which entrain the juice bubbles and throw them in the calandria of other bodies or the condenser. The velocity of vapours should not be allowed to exceed 150 ft. per second, and the vapour pipes etc all should be dimensioned accordingly. A saveall of effective design is useful imposition between the last body and the condenser to arrest any droplets of juice being carried away with the fast flowing vapours.

A very interesting case of entrainment came to my knowledge when all the necessary changes in the diameter of pipe lines were executed, but still the entrainment did not disappear. Later it was discovered that it was due to the design of the tubes which were narrow and long more than 8.5 ft. The phenomenon which was taking place was that the juice during its passage from the third to the last body, was splashing much more than double the height of the tubes due to film evaporation and high velocity, and was being virtually thrown out of the body through the ineffective dome on the top. In this case the calandria tube design had to be changed to stop entrainment. In a similar case elsewhere the third body in a triple was behaving in a similar manner. Here a fourth body with 5 ft. long and 2" diameter tubes was installed and entrainment was eliminated.

Boiling System: According to my experience of all the Boiling systems, the straight three boiling system gives the lowest massecuite per cent cane, highest capacity of the boiling station, the minimum steam consumption, and good sugar, if properly and strictly controlled. I was able to manage even with high purity of mixed juices by using a Werkspoor continuous cool-

ing crystalliser for the cooling of B massecuites. This gave me a drop of about 25-26° Between the massecuite and the molasses, and thereby to control the C massecuite purity.

Final Molasses Purity: It is here that all the ability and experience of the sugar technologist is put to severe test. This is the biggest loss in the boiling house after the loss in bagasse in the mill house. A few suggestions as per personal discussion with Dr. P. Honig, the late lamented sugar technologist of international repute, at the Lyons Hotel in Brisbane, Australia are recorded below:

1. The establishment of sufficient and uniform grains by any of the latest seeding methods is the first desideratum. If the grains do not conform the above requirements, no amount of assiduous work afterwards will prove of any use. It will only be an exercise in futility.

2. The BH molasses which will be fed to boil the C massecuite should be properly conditioned i.e. diluted, heated and mixed, so that it has the correct temperature and is free from any trace of grain whether false or otherwise. If this precaution is not taken it will be difficult to boil a clean C massecuite. Note that the technologists do not know this, but the pan-staff is generally too lazy to enforce it with all its deleterious consequences.

3. The C massecuite should be boiled tight throughout the strike. At the end of the strike a few drinks of hot water are helpful in reducing viscosity and push on exhaustion of molasses. The final strike should be at the proper consistency and absolutely free from any trace of smear.

4. Cooling in the crystalliser is a must to ripen the grain and exhaust the molasses. Preferably cool and then reheat to saturation temperature. Too fast cooling is no good. Slow cooling gives the best results. The practice in Australia was too cool the C massecuites slowly in open crystallisers for 90 hours to get the best results or the lowest final molasses purity.

5. The design of the cooling crystalliser is important. Fletcher-Blanchard type was found quite effective and strong in my experience. Be careful about any water leaks, otherwise all the good work at the pans floor is undone at the crystallisers.

6. Lime water at fresh water temperature may be used to

dilute the stiff massecuite by adding it in small doses till the required consistency is achieved. This treatment does not dissolve the grains, and at the same time reduces the viscosity.

7. The stirrers of the cooling crystalliser should not protrude above the massecuite level otherwise the air which is sucked in every time the stirrer goes in the massecuite forms an emulsion, which inhibits desachharification, and imparts difficulty in curing due to the formation of a skin on the top of the cured massecuite charge in the C foreworkers. The air bubbles formed in the molasses do not permit the sucrose, as it were to deposit on the sugar crystals, and so hamper the process of exhaustion. Mirrles Watson used to supply a cooling crystalliser called the Pitcairn type which had double helix design of the stirrers which lifted and dropped the C massecuite back to the crystalliser for cooling through the air. I saw such a Pitcairn crystalliser at the Mandya Sugar Factory in Mysore, where Dr. Kampf was the chief chemist. On discussion with me due to the unsatisfactory results already being obtained by Dr. Kampf the double helix was removed during the following off season and the results of the next season were reported to me as very encouraging.

8. The transportation of the thick cooled C massecuite to the centrifugals for purging is another small but very important matter. The best arrangement is that the massecuite should flow by gravity, and the C foreworkers should be located as near as possible to the crystallisers. I have found that a slope of one foot in 10 ft. is the correct slope to convey the cooled massecuite by gravity. At quite a few factories I have observed that all the good work done at the pans and the crystallisers is nullified by diluting and pumping the ripened C massecuite to the centrifugals which are erected far off. Sometimes this conveying is done by screw conveyers which also do not work without dilution. Further the screw conveyers by their very design emulsify the massecuite with the skinning effect in the centrifugals already explained above.

9. High speed centrifugals are looked upon as the remedy to cure any type of incurable C massecuites. But this is entirely a false notion. The high speed centrifugals will cure good and clean massecuites better than the low speed centri-

fugals, but will not help to purge massecuites with uneven or false grain. They will pack it so hard that dropping will be a problem with lost time and torq expensive screens. So whether you have medium speed or high speed centrifugals, concentrate on good clean C massecuites, and you will happy.

10. Be extra cautious in the purging of C massecuites in the foreworkers. The purity of C sugar from the foreworkers should not be less than 85°, otherwise there would be recirculation of non-sugars so much so that the subsequent massecuites will have high viscosity, and the double-cured C sugar seed unsatisfactory for making good sugar. Even if this C sugar with high non-sugar content is remelted the resulting melt will carry and circulate the non-sugars again to the top of the process and prove a curse to the whole boiling process. So watch out for the C foreworkers and the purging of C massecuite. Many chief technologists have been in trouble on this count, and so beware.

Dryer: No dryer should be used for the drying of sugar as it spoils the lustre of the sugar crystals by friction during the process of passing through it. The Superintendence Co. which used to examine the sugar meant for export informed me that white dryer sugar was rejected by them from export as it looked more like salt than sugar. With regular uniform grains, dry superheated steam in the afterworkers and fixing baffles in the hoppers for turning the moving sugar, it is quite feasible to produce and dry sugar without the aid of dryers, and maintain the brilliance of the sugar crystals. I have done it in every factory in which I worked and so can vouchsafe for it by personal experience, and not by imagination.

Storage: Sugar is hygroscopic, and so when exposed to moist conditions it soon absorbs moisture and becomes wet. It is also sensitive to sunlight and loses colour and tends to become yellow when exposed to sunlight. The sugar godowns therefore, should have no windows, and the lights should be from artificial source. But the wiring should be good otherwise there is chance of fire due to electric spark. It has happened and the whole godowns have been gutted. In my personal knowledge it happened at the Captainganj Sugar Factory in the year 1955' when one of the sugar godowns was completely

gutted. A fire got started in one of the godowns at the Shahganj Sugar Factory, but it was soon extinguished, because it was daytime and luckily sugar loading was going on. It may be interesting to know that the carbonation sugar deteriorates faster than the sulphitation sugar on exposure to sunlight, although carbonation sugar is manufactured by a more rigorous process of clarification, and should keep better. Dr. Doss, sometime Director of the National Sugar Institute, Kanpur, opined that it may be due to the sulphur content in the top layer of sulphitation sugar crystals, imparting to it a more resistant character to fight infection of any type. This matter has been discussed in detail at the annual conventions of the Sugar Technologists' Association, but no consensus of opinion emerged out of the discussions. The heat of the sun playing on the top layer of bags stored in a godown also has a marked effect on the deterioration of sugar colour. It has been advised that the stacking of sugar bags should not be carried too near to the roof to avoid the radiation of heat from the hot roof on to the sugar bags during the summer months. Many old sugar godowns had and have gutter for the drainage of rain water running through the centre of the godown or on the partition wall of two godowns. These are all risky arrangements and quite a large number of sugar bags have been damaged by leaking gutters. Gutters have started overflowing also as the pattern of rainfall, particularly its intensity has increased so much that the gutters are too inadequate to carry the flow of water, and get filled up to overflowing. In short the drainage of rain water is very important and vital consideration is necessary when constructing a new sugar godown.

The floor of the sugar godown has to be moisture-proof. The National Sugar Institute has worked out its recommendations for constructing a moisture-proof floor for a sugar godown. These have been actually tried in practice and proved successful and so may be safely followed. It is better to ventilate the godowns when the humidity outside is low, and keep the godowns closed when the humidity outside is high. An anti-chamber in front of the doors will be found useful to exclude direct rain falling on the doors and leaking inside.

General: a. Never run a jammed house. Whether you know it or not the recovery will go down.

b. This is of essence that the minimum possible time should elapse between the harvested cane in the field and the sugar in the bag. All the unnecessary storage vessels in the factory should be thrown out, otherwise, in spite of your best efforts they will always remain filled up with sugar house products and cause inversion losses, and causing you headache to account for the undetermined losses.

c. Fuel balance and heat economy is a full subject by itself, but due attention to this most vital matter is essential. If steam is not available for the boiling house due to any reason, either inefficient generation or inefficient utilisation, the factory can never crush and will always be caught in a vicious circle. So much so that sometimes there may be no fuel to restart the factory and raise steam in the boilers. According to my experience it is necessary for the chief engineer and the chief chemist to sit together and thrash it all out in a spirit of co-operation and mutual assistance, because it cannot be resolved by the departmental outlooks, but a comprehensive factory outlook is called for. By this mutual bickerings and frayed tempers can be avoided in the interest of better working.

d. Do not make frequent changes, but stick to every factory where you work for some years. The proverb that a rolling stone gathers no moss is still true. Moving about from factory to factory accounts for your poor technical knowledge and experience. I have also seen that good mill-owners do not like the persons who make very quick changes and cannot stick to their job.

e. Visit as many factories as practicable for gaining vicarious experience.

f. Keep a strict control on the acidity of spray pond water. It gets acid by circulation and also by absorbing the acid sulphur vapours from the pans which find their way to the condenser. If proper control is not exercised, the whole condensing system with its pumps, pipe lines and condensers can be eaten away in one season if made of mild steel.

I had occasion to observe the working of some sugar factories in which the chief engineer is senior and strong and the chief

chemist junior and weak. In such cases, generally speaking, the chief engineer takes undue advantage of his position, gives most of his attention to the mills and the boilers, for which he is directly responsible, and relegates the boiling house to its fate. He fails to provide and does not provide all the desired facilities without which the chief chemist cannot run and control the boiling house upto the requisite efficiency. There are frequent stoppages for juice jam, and the whole boiling house soon presents a picture of confusion and jammimg, which is most undesirable in a continuous process of operation. Although the embarrassed chief chemist is not at fault, he is made a scapegoat and bears all the unhappy consequences.

Before concluding, I cannot but emphasise the importance of admitting quickly and meekly if you are in the wrong. It takes the wind out of the sails of the adversary, and increases respect for you in his mind. Further do not tell a lie, because it is easy to tell a lie, but it is very difficult to tell only one lie. Other lies have to follow to cover up the one lie already spoken.

In this chapter I have endeavoured to share my experience with the young sugar technologists who are coming up with all the requisite technical training from the National Sugar Institute, and I wish them God-speed in their own interest and in the interest of the Indian sugar industry which has a bright future. But it must be remembered that technical knowledge alone cannot lead to success, there are other necessary conditions as adumbrated above to make for success.

EPILOGUE

Like Rabindranath Tagore I also do not know who paints the pictures on memory's canvas, but I can say that the canvas is inexhaustible and the painter a master.

When I got into my mind to write my recollections, I considered it to be an impossible task as I had neither any notes nor any diary to fall back upon. But praise be to the memory painter. As I went into the realms of childhood, I could witness scene after scene on the mental curtain like the methodical movement of a fresh film. And I can say in the light of my personal experience that my memory did not fail me at any step in covering a period of a little more than 60 years.

Memory is the mental faculty that enables one to retain and recall previously experienced sensations, impressions, information and ideas. The ability of the brain to retain and to use knowledge gained from past experience is essential to the process of learning. Although the exact way in which it remembers is not completely understood, it is believed that a portion of the temporal lobe of the brain, lying in part under the temples, acts as a kind of memory centre drawing on memories stored in other parts of the brain.

There are many theories about the way memories are stored. Millions of nerve cells in special patterns are probably involved. Memory is only one of the faculties that combine to make up intelligence. Without memory, however, it would be impossible to profit from past experience, and the other elements of intelligence would be of little use. But at the same time right memory means that you will remember only enabling and happy experiences of the past in order to guide

your future, and not harbour cantankerous recollections of the past which have a depressing and melancholic effect on you, which may last for years and perhaps a life time. Let us sing with Longfellow:

Trust no future however pleasant,
Let the dead past bury its dead.
Act act in the living present,
Heart within and God overhead.

 I have never tried to pry into the future, and what I read in my M.A. when a student of English literature that 'to be forgetful of the past and to be ignorant of the future is a very merciful provision in nature", stuck to me throughout life, and I say with all the emphasis at my command that I have always profited by it in my practical life. For today is the only reality. Nobody has any experience of yesterday or tomorrow, for today is the tomorrow of yesterday. Kalidas has written a poem called "Salutation to the Dawn", and a relevant portion is quoted below.

Look to this day,
For it is life, the very life of life,
For yesterday is but a dream,
And tomorrow is only a vision,
But today well lived makes yesterday a dream of happiness,
And every tomorrow a vision of hope.

We are living in an age of science and technology. Science is a process of investigation into the laws of nature, but technology is the application of those investigations which has created problems. Man has been reduced to a position of insignificance. We are living in an Impersonal Society. Nobody is interested to know anybody else, not even his neighbour. Formerly in small places everybody knew everybody else. Therefore the man is frustrated, and feels small and unimportant, and so in order to assert himself indulges in meaningless violence like the burning of Government property, railways, buses and the like. Today's society is a rapidly changing society, and the process of adjustment is so difficult that it

creates stresses and strains, psychological, psycho-somatic, neurotic and delinquent.

Man is running after material possessions, status symbols, but status symbols are constantly on the move, and the status seekers are baffled to keep pace with their neighbours.

Hidden Persuaders are constantly advertising for newer and newer items, goods and commodities, through sensational headlines, and visual posters. They create discontent and tell you that you are behind in the rat race, you are outmoded. We are living in an age not of Needs but of Wants. Needs can be satisfied, but Wants are insatiable.

Then there are Waste Producers, who are manufacturing goods that should not be durable. They should be temporary, and should last but for a short time so that the market may not shrink. America, the richest country of the world is restless as a result of satiety with affluence. They have every thing that money can buy, but what next? I see rich Americans treading the streets of Calcutta almost everyday, with saffron scanty clothes, barefooted and shaven heads, singing Hare Ram Hare Krishna at the top of their voice. Why? With all the profusion of wealth, America today has the highest incidence of heart attacks, the highest incidence of suicides, the highest incidence of cancer, the highest number of divorces, and the highest incidence of hypertension and diabetes. If these are the signs of prosperity, well, I have no comments to make.

We want to live the life of our neighbours and not to live our own individual lives, and hence the frustration and disappointment. We are unhappy because our neighbour is seemingly happier. Hippies are intelligent persons, and are also well-to-do, but they are the victims of the technological society, which has given man all physical and material comforts, but taken away something else which they are seeking in their own way. Hippies represent the curse of modern civilisation. They have made Banares their resort, because they are after finding peace which they are missing, and want to escape from technological society.

To find peace and happiness in this restless world, which has become a scientific giant, but a moral infant, a new philo-

sophy of life is needed which will create a life of creative joy. We are following a percept~~e~~ philosophy and not objective philosophy. There should be no gap between precept and practice. Philosophy should give a sense of direction and perception like the realisation of fire by burning our hands.

We are living in a world of Mental Projection. We are living in a world created by us and not by God. We see a snake in a rope. The snake is not there, but we are projecting it in the rope. We should not be the victims of society, but creators of society. Each individual has to reform himself if the whole society is to be reformed. The trouble is that everybody wants to reform the society, but not himself. Therefore, let us begin with ourselves, and slowly but surely this world will be a place for the Gods to live in.